OUTER SPACE

POLITICS AND LAW

by V. Vereshchetin,
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Outer Space: Politics and Law

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Translated from the Russian by *Murad Saifulin*, Cand. Sc. (Law)
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PREFACE

Space exploration has tremendously expanded the horizons of human knowledge and activity. In terms of its significance, man's entry into outer space may be compared with such landmarks in the development of human culture as the discovery of fire, the invention of the wheel and the great geographical discoveries.

Space exploration has yielded new data on the Earth and its atmosphere, the solar system and remote regions of the Universe and the interplanetary medium, data which are unattainable by other means. The progress of space exploration has also given rise to new trends in man's economic activity, which today are unthinkable without the use of space technology—space communications, meteorology, navigation, and the study of the Earth's natural resources. At present new technological processes are emerging which, with time, are likely to evolve into space-based branches of production.

By its nature and scale space exploration and its practical application are an ideal sphere for the pooling of efforts by many states. For this reason the internationalisation of space activity is now a major trend in modern space exploration, as can be seen in the activities of international space organisations, in space flights of international crews, and in such large-scale projects and programmes as the Vega Project to explore the planet Venus and Halley's comet. This project has united scientific and industrial teams of nine countries belonging to different social systems and in coordination with other comet missions (Giotto and Planet-A) has become a global space project.

The fact that recent years have seen the growing threat of space being turned into another sphere of military confrontation cannot but greatly alarm all humanity. The realisation of US plans to develop space weapons will not only involve the world in a new dangerous spiral of the arms race and aggravate and destabilise the world situation but also undermine the principles of broad international cooperation in the exploration and use

of outer space. That is why the Soviet Union is doing its utmost to achieve bilateral and multilateral agreements in order to prevent the militarisation of outer space and keep it free of all weapons. International space law has a major role to play in the achievement of these goals.

From the very beginning of the space era law has been called upon to secure the stable and peaceful development of national and international space activity and to meet the interests both of individual countries and of the world community as a whole. There is good reason why the United Nations has become a centre for drafting the norms and principles of international space law. It has set up a Committee on the Peaceful Uses of Outer Space which is now composed of 53 states.

Today, international space law includes numerous treaties and agreements aimed at establishing law and order in space activity. However, the on-going space exploration and its broad use for practical purposes give rise to new problems in relations between states engaged in the exploration and use of outer space, to problems that require international political and legal settlement. And the primary task is to prevent an arms race in outer space.

This book deals with the most pressing outstanding political and legal questions of the exploration and use of outer space. It also shows the legal mechanism of the international space programmes carried out by the Soviet Union together with other states or within the framework of international organisations.

The authors have for many years been engaged not only in theoretical research but also in the practical elaboration of the legal principles and norms of space activity in various UN bodies, and also in the organisation of international cooperation in this particular field. This book is therefore an account by direct participants in the process of states' cooperation in the legal, scientific and technical spheres of space activity. I believe that this fact will make the book particularly interesting for the reader.

Academician *Roald Sagdeyev*,
Director, Space Research
Institute, USSR Academy of Sciences

Chapter 1

BARRING WEAPONS FROM OUTER SPACE: THE KEY TASK OF INTERNATIONAL SPACE LAW

1. Star Wars or Star Peace?

In 1983, the US President announced the start of preparations for launching a new programme to develop a large-scale ABM system with land- and space-based elements, and weapons based on new physical principles. The US ABM system is supposed to use laser and particle beam weapons which have been in the process of development in the country for a number of years. In defiance of the Soviet-US 1972 ABM Limitation Treaty, which bans the development, testing and deployment of space-based ABM systems or components, the USA is making ready to deploy ABM weapons in near-earth orbits.[1] It is planned to use laser and particle beam weapons to strike land, sea, air and space targets. Work is under way to create "third generation weapons" (following the atomic and hydrogen bombs) based on the transformation of nuclear blast energy into an X-ray laser beam with a view to using this weapon to strike missiles in flight at a distance of several thousand miles.

The "strategic defence initiative" proclaimed by the US President is justifiably regarded by world public opinion as a programme of preparing Star Wars, as a threat of a qualitatively new spiral in the arms race and its spread to outer space.

In essence, the so-called defence initiative is patently aggressive, since it aims to deprive the other side of the possibility to retaliate in the event of a nuclear attack against it. The US Administration is banking on being able to deal a first strike against the Soviet Union with impunity. Moreover, it ignores the authoritative opinion of scientists, experts and political figures in many countries, including the USA, who say that an objective scientific analysis shows that it is impossible to create an absolutely impenetrable anti-missile "shield" and that the unpredictable arms race which the Star Wars programme will open is dangerous for peace and the security of all nations, including the USA.

Militarisation of outer space is not a new phenomenon in US

[1] A. Natalyin. "The US Strategic Defence Initiative Runs Counter to International Law". *Sovetskoye gosudarstvo i pravo*, No. 11, 1985, pp. 113–119.

space policy. The use of space technology for military purposes has played a major role in US astronautics since its inception. Parallel to the civilian programme carried out by the National Aeronautics and Space Administration (NASA), the USA has always had a military space programme that is implemented by the Defence Department and other military agencies of the country. They have for many years been putting to active use numerous space systems of reconnaissance, communication and navigation. Satellites and other space vehicles launched to fulfill scientific and applied missions are used intensively by the USA to carry out military assignments.

Data received from US space systems have been repeatedly used in military operations in various "hot spots" around the globe. For instance, during the US aggression in Vietnam American military aircraft made use of satellite-supplied meteorological information. US reconnaissance data obtained by satellites were given to the Israeli aggressors during Arab-Israeli conflicts in the Middle East. US satellite-supplied information was widely used by the British in the zone of military operations during the Anglo-Argentinian conflict over the Falkland Islands (Malvinas).[1]

The course towards developing and deploying space strike systems and stationing weapons in and directly spreading the arms race to outer space has become a qualitatively new phenomenon in the US policy of militarising outer space. Along with this the USA has been making more sophisticated the existing auxiliary space systems (those of communication, meteorology, navigation, photographic reconnaissance, detection of missile launchings, etc.) and ever more widely employing civilian space projects for military purposes. For this purpose, the USA has established the Space Command (SPACECOM), an agency having broad powers.

The development of space weapons has become an important part of US military preparations, and the use of space technology for military purposes has been playing an ever greater role in US strategic plans. The facts show that the US military already regard outer space as a future theatre of military operations, and space strike systems as a major element of a nuclear first strike capability.

In the past, the share of military projects in allocations for US space programmes did not exceed 30 per cent, but since 1982 US expenditures on military space activity far exceed the funds appropriated for civilian space programmes.[2] Many of the NASA "civilian" projects are also military-oriented. The Space Shuttle developed by NASA is to be used on a wide scale to test new types of space weapons, make regular deliveries to and from space of various military

[1] A. Cocca, "Satellite: Warring Weapon", *Proceedings of the 25th Colloquium on the Law of Outer Space*, New York, 1983, pp. 29–71.

[2] *Outer Space–A New Dimension of the Arms Race*, Ed. by Bhupendra Jasani, SIPRI, London, 1982, p. 41.

objects and cargoes, service future space stations designed to control global military operations from space, inspect space vehicles launched by other countries, etc. Also under discussion are plans to create a fleet of two-seater military spaceships which could take off and land on airfields and would be equipped with weapons to destroy satellites and spaceships of other countries.[1]

The development and testing of anti-satellite systems holds an important place in the US plans to create space weapons. Today the USA is stepping up the development of new types of anti-satellite systems launched from aircraft and from the Earth. It is also planning to adopt homing anti-satellites launched by a two-stage missile from combat fighters.

The development of space weapons, including anti-missile and anti-satellite weapons, will upset strategic stability and international security and create the real threat of outer space becoming a theatre of military operations, a source of grave peril for all people on earth.

Soviet initiatives aimed at concluding international agreements to close the door to the militarisation of outer space and at strengthening the existing agreements in this field are prompted by the desire to prevent disastrous developments and avoid an uncontrolled arms race on earth and its spread to outer space, and by the desire to keep outer space open for peaceful activity by all states. The Soviet Union has counterposed its concept of Star Peace and broad cooperation of all states in the peaceful exploration and use of outer space to the US Star Wars programme.

The USSR has strongly opposed the spread of the arms race to outer space, but not out of fear of the US "Star Wars" programme. Relying on the conclusions arrived at by Soviet scientists and specialists, Mikhail Gorbachev, General Secretary of the CPSU Central Committee, said at a press conference in Geneva after the Soviet-US summit meeting that the Soviet Union would find a fitting response to the US Star Wars programme and "it would be effective, less costly and could come within shorter time-limits".[2]

On January 15, 1986, Mikhail Gorbachev advanced the Soviet programme of complete and universal liquidation of nuclear arms before the year 2000, to be accompanied by the prohibition of space strike weapons.[3]

2. Current Principles and Norms Limiting the Use of Outer Space for Military Purposes and Proposals to Develop and Supplement Them

We know from experience that in many instances when common sense has taken the upper hand people have managed to strike a

[1] *Aviation Week and Space Technology*, August 27, 1984, p. 14.
[2] Supplement to *Moscow News*, No. 48, 1985, p. 6.
[3] *Pravda*, January 16, 1986.

compromise and move forward by taking measures to limit the use of outer space for military purposes. We also know from history that it has been much easier to reach agreements with regard to those space-based weapons and systems which were in their early stage of development. Today there is a whole series of international agreements regulating these questions.

The universally recognised principle banning the threat or use of force in defiance of the UN Charter (Art. 2.4) is operative in outer space as in any other sphere of international relations. The application of this principle to outer space has been confirmed in the very first resolutions of the UN General Assembly on space activity and later in the 1967 Space Treaty, Article III of which says: "States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the Moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international co-operation and understanding." It follows from the general principle prohibiting the threat or use of force that it is impermissible to attack or threaten to attack the space objects of another state or to interfere forcibly in their functioning; it is equally impermissible to use space objects to threaten or actually to attack targets on earth or in the air.

However, the very principle of non-use of force has so far not precluded the military use of outer space because it does not ban the development, testing and deployment of space weapons. The possibility remains open of using force in and from outer space as a way of exercising the right of individual or collective self-defence against an armed attack (Art. 51 of the UN Charter), or by decision of the Security Council in order to prevent or remove the threat to peace or to suppress acts of aggression and other breaches of the peace (Art. 39, 41 and 42 of the UN Charter).

It is therefore by no means enough merely to adopt the general principle of non-use of force in order to prevent the militarisation of outer space and to preclude the spread of the arms race to outer space.

The general principles of international law may be made more effective through their development and concretisation, more precise definition of their normative content, and the conversion of these principles, where and when possible, into clearly expressed contractual obligations of states, which lend themselves to unambiguous interpretation. This general proposition is also fully applicable to the principle of non-use of force.

International law has seen some examples of progress in this direction. For example, the normative content of the principle of non-use of force has been set out in concrete terms in such documents as the 1970 Declaration on Principles of International Law Concerning Friendly Relations and Cooperation among States in Accordance

with the UN Charter, the 1975 Final Act of the Conference on Security and Cooperation in Europe, and some bilateral treaties.

Both a universal treaty on non-use of force in international relations and similar treaties relating to particular regions or spaces could become the next logical stage in developing this principle and making it more effective.

The need urgently to draft and conclude such treaties becomes particularly evident in periods of aggravation of international relations and increased danger of the use of force, all of which can lead to disaster. In such a situation even a partial agreement on non-use of force in a particular sphere of international relations could be an important deterrent factor. In this respect, outer space is now a priority.

A major direction of efforts to prevent the militarisation of outer space is the adoption of measures (also given international legal forms) aimed at banning space armaments, that is, at providing material guarantees against the use of force in and from outer space.

A number of earlier draft treaties on the non-use of force, both universal and regional ones, proposed, among other things, prohibition of the use of force in outer space. For instance, Art. 1 of the Soviet draft of the World Treaty on the Non-Use of Force in International Relations, which has been under UN consideration since 1976, proposes that states shall refrain "from the use of armed forces involving any type of weapons, including nuclear or other types of weapons of mass destruction, on land, on the sea, in the air or in *outer space* (italics ours—*V. V.*), and shall not threaten such use."[1]

The 1983 Political Declaration of the Warsaw Treaty member states says that the Treaty could be based on the "mutual commitment of the member states of both alliances not to be the first to use either nuclear or conventional weapons against each other and therefore not to be the first to use against each other any military force at all."[2] The proposal noted that this obligation should be extended to spacecraft as well. The Treaty could also include the pledge not to endanger international sea and air routes, and *space communications* (italics ours—*V. V.*) passing through spaces to which no national jurisdiction extends. This proposal was confirmed and developed in the Address of the WTO member-countries of May 7, 1984[3] and in the Declaration of CMEA Member-Countries on maintenance of peace and international economic cooperation of June 14, 1984.[4]

In 1983, the Soviet Union submitted for the consideration

[1] *Pravda*, 30 September, 1976. See also UN General Assembly, Official Records: 33rd Session, UN Doc. Suppl. No. 42, A/33/41.

[2] *New Times*, No. 3, 1983, pp. 10–11.

[3] *Pravda*, May 8, 1984.

[4] *Pravda*, June 15, 1984.

of the 38th session of the UN General Assembly its draft of a Treaty on the Prohibition of the Use of Force in Outer Space and from Space Against the Earth, which included detailed, broad and radical proposals relating to outer space.[1] This draft developed the principle of non-use of force in and from outer space both in terms of states' political and legal obligations and in terms of back-up measures banning the development, testing and deployment of a whole class of space armaments.

As regards the political and legal obligations, they are expressed in Art. I of the draft, which prohibits to resort to the threat or use of force in outer space and the atmosphere and on the Earth through the utilisation for that purpose of space objects in orbit around the Earth, on celestial bodies or stationed in space in any other manner. It also prohibits to resort to the threat or use of force against space objects put into orbit around the Earth or placed on celestial bodies or stationed in outer space in any other manner.

The proposal to ban for ever the use of force in outer space and from space against the Earth and also from the Earth against objects in space was also included in the Soviet draft of the General Assembly resolution on the "Use of Outer Space Exclusively for Peaceful Purposes for the Benefit of Mankind". This draft was submitted by the Soviet Union to the 39th Session of the UN General Assembly in September 1984.[2]

This draft contained other political and legal provisions of fundamental importance for the non-militarisation of outer space and prevention of the spread of the arms race there. It proposed that the UN General Assembly should proclaim the exploration and use of outer space exclusively for peaceful purposes, for the benefit of humanity, as an historical responsibilty of all states, and declare in this connection that the exclusion of outer space from the sphere of the arms race should become a mandatory norm of state policy and a generally recognised international obligation. The USSR suggested, as did its draft treaty of 1983, that the political and legal principles concerning the non-militarisation of outer space should be supplemented and strengthened by specific bans guaranteeing the observance of these principles by all states.

Following the discussion of this question, the UN General Assembly adopted a resolution on 12 December 1984 by 150 votes. It says that all states are duty-bound to refrain from the threat or use of force in their space activity. This was reiterated by the UN General Assembly in 1985.

Let us now turn to the current special international legal prohibitions and restrictions that concern the military use of outer space. They exclude definite areas of outer space from the sphere of military

[1] UN Doc. A/38/194, 23 August, 1983.
[2] UN Doc. A/39/243, 27 September, 1984.

activity and also ban and limit certain types of weapons and other means of using outer space for military purposes.

The more far-reaching prohibitions extend to the Moon and other celestial bodies which, under the 1967 Space Treaty (the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies), should be used "exclusively for peaceful purposes", and where any military activity should therefore be banned. Art. IV of the Treaty contains an approximate list of the types of activity which are prohibited on the Moon and other celestial bodies. This list covers the deployment of nuclear weapons or any other types of mass destruction weapons, the construction of military bases, structures and fortifications, the testing of any types of weapons, and the conduct of military exercises. The Treaty allows for the use of military personnel for scientific research or for any other peaceful purposes and also for the use of any equipment or facility necessary for the peaceful exploration of the Moon and other celestial bodies.

The list was supplemented and extended in Art. 3 of the 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, which, in addition to the aforementioned prohibited types of use of the Moon and other celestial bodies, mentions the placement of objects with mass destruction weapons in orbit round the Moon or in other trajectories toward the Moon or round it, and the use of such weapons on or below the surface of the Moon.

Some jurists at times describe the complete prohibition of military activity on the Moon and other celestial bodies as the demilitarisation of the Moon. In fact, the etymological meaning of this term testifies to the inadequacy of its use in this case. With respect to the Moon and other celestial bodies it would be more correct to speak not in terms of demilitarisation, that is, prohibition of earlier military activity, but in terms of preventing the military use of the Moon and other celestial bodies, or in terms of the prohibition of their militarisation.

As for outer space as a whole, including "near space", not far from the Earth, military activity has not yet been completely prohibited there. Among the partial measures that restrict the military use of outer space, major importance attaches to the obligation assumed by the states parties to the 1967 Space Treaty "not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction,... or station such weapons in outer space in any other manner" (Art. IV).

The most widespread interpretation of the term "mass destruction weapons" covers such types as nuclear, chemical and biological weapons and other weapons comparable with them in their destructive power, including those that may be developed in the

future.[1] The Treaty forbids the placement of any of these types of weapons in orbit around the Earth or "in any other manner" in outer space. Moreover, in the opinion of some jurists, and opinion shared by the authors of this book, the concept of placement "in any other manner" also covers the installation of such weapons on spacecraft, even if they do not complete one orbit around the Earth.[2]

Some important norms limiting the possibility of military acivity in outer space are included in bilateral or multilateral treaties or agreements that provide for partial measures in the sphere of disarmament.

Nuclear explosions for testing and other purposes in outer space are outlawed by Art. I of the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water that came into effect on 10 October 1963. An important factor of increasing the effectiveness of this prohibition is to ensure that it is observed by all nuclear powers, including China and France, which have not yet acceded to it.

The military use of techniques to change outer space and also from outer space to change the Earth's natural environment is banned by the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques that came into effect on October 5, 1978.

Soviet-American agreements also provide for certain restrictions with regard to the military use of outer space (in both quantitative and qualitative respects).

The 1972 Treaty on the Limitation of ABM Systems (Art. V) prohibits the development, testing and deployment of space-based anti-ballistic missile systems or components. Under this treaty and the 1974 protocol attached to it the USSR and the USA have each undertaken to possess only one area to deploy ABM systems and not more than 100 anti-ballistic missiles on launching sites. The US "Strategic defence initiative" sharply contradicts this treaty. Under the Interim Agreement on Certain Measures with Respect to the Limitation of Strategic Offensive Arms (SALT I) signed in 1972, the USSR and the USA have undertaken to limit the number of ICBM launchers, which fact also imposes definite quantitative restrictions on the military use of outer space.

The coming into force of the SALT II Treaty signed by the USSR and the USA in 1979 but unratified by the US Congress would

[1] See C.-G. Hasselmann, "Weapons of Mass Desctruction, Article IV of Outer Space Treaty and the Relationship to General Disarmament", *Proceedings of the 25th Colloquium on the Law of Outer Space*, New York, 1983, pp. 99-111.

[2] See, for example, R. J. Zedalis and C. L. Wade, "Anti-Satellite Weapons and the Outer Space Treaty of 1967", *California Western International Law Journal*, Vol. 8, Summer 1978, pp. 464-465.

have made it possible to introduce further quantitative and qualitative limitations. In particular, this treaty provides for the commitment of both parties "not to develop, test or deploy ... systems for placing into Earth orbit nuclear weapons or any other kind of weapons of mass destruction, including fractional orbital missiles."[1] This commitment is an additional guarantee of compliance with the prohibition on the placement in outer space of mass destruction weapons.

In addition to the foregoing bans and limitations, multilateral and bilateral international agreements include a number of provisions which could be described as indirect limitations of military activity in outer space. Among them we find the requirement to hold international consultations if the activity or experiment planned by a state in outer space may cause "potentially harmful interference with activities in the peaceful exploration and use of outer space" (Art. IX of the 1967 Space Treaty), the ban on obstructing national technical means of verification used by the other side to control the observance of the SALT I Treaty and the ABM Limitation Treaty (Art. V and Art. XII, respectively), and other measures.

Taken together, the aforementioned prohibitions and restrictions on the military use of outer space enable us to speak about a gradually evolving international legal principle of using outer space for peaceful purposes. So far it is chiefly of a programmatic nature; it represents a guideline, a task for the future. This principle presupposes the obligation of states to work vigorously and purposefully to exclude outer space from the sphere of military activity while strictly observing the pertinent rules in force and using the general and partial measures aimed at disarmament and arms reduction.

This is an objective of a series of Soviet proposals made in recent times. Their adoption would raise a reliable barrier in the way of the spread of the arms race to outer space.

The purpose of these proposals is to exclude the use of force in outer space and from space against the Earth, to remove the material prerequisites for this danger, and to create reliable guarantees of a regime under which space objects will not present a military threat to other states and will themselves be secure.

That is precisely the goal pursued by the draft Treaty on the Prohibition of the Deployment of Weapons of Any Kind in Outer Space (1981), the draft Treaty on the Prohibition of the Use of Force in Outer Space and From Space Against the Earth (1983), and the draft Resolution of the UN General Assembly on the Use of Outer Space Exclusively for Peaceful Purposes for the Benefit of Mankind (1984). The same goal has been set by the Soviet Union, which proposed to the US government the holding of bilateral talks on the prevention of the militarisation of outer space.[2] To facilitate the

[1] UN Doc. CD/28.
[2] *Pravda*, June 30, 1984.

achievement of positive results in multilateral and bilateral talks, in August 1983 the Soviet Union unilaterally introduced a moratorium on the launching of all types of anti-satellite weapons into outer space[1], which will remain valid until other countries, including the USA, followed suit, and in June 1984 proposed to the USA the introduction, on a mutual basis, of a moratorium on the testing and deployment of space armaments, which would be effective from the start of the talks, and to which other states could accede.[2]

The Soviet draft Treaty on the Prohibition of the Use of Force in Outer Space and from Space Against the Earth, transmitted by decision of the UN General Assembly for consideration by the Conference on Disarmament, is the most comprehensive draft of a multilateral international treaty aimed at preventing the militarisation of outer space. It provides for concrete measures that preclude the use of space objects as weapons or weapons carriers, and guarantee the safe functioning of space objects themselves.

The first group of the aforementioned measures is provided for by Art. 2 of the draft Treaty (items 1, 2 and partially 5). Item 1 prohibits the testing and deployment of any space-based weapons by putting them in orbit around the Earth, by stationing them on celestial bodies or in any other manner for the purpose of destroying objects on the Earth, in the atmosphere or in outer space. The Treaty also bans the use of space objects put in orbit around the Earth, placed on celestial bodies or stationed in outer space in any other manner, in order to destroy any targets on the Earth, in the atmosphere or in outer space (Art. 2.2). Item 5 of Art. 2 prohibits the testing and military use of any manned spacecraft.

The second group of measures that guarantee non-use of force with respect to space objects is provided for by Art. 2 (items 3, 4 and partially 5). Item 3 bans efforts to destroy, damage, disturb the normal functioning or change the flight trajectory of the space objects of other states, and item 4 prohibits efforts to test or create new anti-satellite systems and obliges states to destroy any anti-satellite systems they may already have. Item 5 makes special mention of the obligation not to test or use any manned spacecraft for anti-satellite purposes.

Arts. 4 and 5 of the Soviet draft contain provisions on verification of the discharge of obligations that follow from the draft Treaty, and on the settlement of all possible disputes regarding its implementation. For these purposes the Articles provide for the use, under international law, of national technical means of verification (means of tracking space objects and also other means used on land, on the World Ocean and in outer space), for the prohibition of interference with the functioning of national technical means of verification,

[1] *Pravda*, August 19, 1983.
[2] *Pravda*, June 30, 1984.

for exchange of information and the holding of consultations, and for the use of other international procedures, including the setting up of a Consultative Committee by states parties to the Treaty, and its convocation upon the request of any signatory state.

Developing the 1983 draft Treaty, the Soviet Government, in its statement of June 29, 1984 and in the Soviet draft of a UN General Assembly resolution submitted on September 27, 1984, proposed a ban on and liquidation of a whole class of armaments: space strike weapons, including space-based anti-satellite and anti-missile systems, as well as any land-based, air-based and sea-based weapons designed to strike objects in outer space. The Soviet programme of complete and universal liquidation of nuclear arms before the year 2000 also includes the prohibition of space strike weapons.

If the Soviet proposals were accepted, they would contribute to an advance in limiting and reducing armaments in general, and would create favourable conditions for international cooperation in the exploration and use of outer space in the interests of all states.

The Soviet-American talks started in 1985 on Soviet initiative on the entire range of nuclear and space armaments open up broad possibilities for preventing an arms race in outer space and halting it on the Earth, provided there is the political will to reach a mutual understanding in this matter. The US Star Wars programme remains the chief obstacle on the way to settling this pivotal issue of today.

To prevent the militarisation of outer space means keeping it free of all weapons, and achieving a ban on the development, testing and deployment of space strike weapons, including anti-satellite and anti-missile systems. By prohibiting once and for all the use of force in outer space, from space against the Earth and from the Earth against objects in space and also by reinforcing this prohibition with requisite material guarantees, international law would lay a solid foundation for the use of outer space for the benefit of humankind.

3. Different Interpretations of Certain Fundamental Provisions of International Law

In view of the growing threat of the arms race spreading to outer space, our attention is drawn to the fact that works recently published by American jurists dealing with the legal problems of the military use of outer space contain statements that raise serious objections.[1] The vast number of such works and the closeness of some of their

[1] H. H. Almond, "Military Activities in Outer Space. The Emerging Law". *Proceedings of the 24th Colloquium on the Law of Outer Space*, New York, 1982, pp. 149-157; "Toward Shared Interpretations of the Critical Policy Dimensions of Space Law", *Proceedings of the 26th Colloquium on the Law*

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authors to the military establishment testify to a strong tendency in the US doctrine of international law rather than merely to conceptions of individual American jurists.[1]

These works deal with such important questions as the interpretation of the principle of non-use of force or threat of force, the appraisal of actions by countries not envisaged directly by international law, the interpretation of the concept "exclusively for peaceful purposes", analysis of the right to self-defence in outer space, the operation of prohibitions and restrictions of military activity in outer space in the event of armed conflicts, etc. Let us consider the different interpretations given by Soviet and American experts on international law to these fundamental problems of great importance for international peace and security. We shall deal first with more general statements.

The first thesis. It is claimed that there is a principle according to which everything that is not specifically prohibited is permitted by international law. Robert Bridge writes: "One of the fundamental truths of international law is the fact that if an act is not specifically prohibited, then international law permits it."[2]

The formula "everything not prohibited is permitted" is not regarded as universal and all-embracing in domestic law.[3] It is, furthermore, not applicable to contemporary international law, especially to its new branches (e.g. international space law) in which comprehensive legal regulation is not yet duly ensured in view of historical and other factors.

Professor Manfred Lachs, former President of the UN International Court of Justice, made the following correct statement at an international astronautical congress: "The old principle that everything not prohibited is permitted is not valid today. The freedom of action is determined by the possibility of infringing upon the rights of others. Hence the limitation of rights and the need for cooperation and consultation in all cases where a State may by its activity affect

of Outer Space, New York, 1984, pp. 271-286; R. L. Bridge, "International Law and Military Activities in Outer Space", *Akron Law Review*, Vol. 13, No. 4, Spring 1980, pp. 649-664; A. J. Butler, "Peaceful Use and Self-Defence in Outer Space", *Proceedings of the 25th Colloquium on the Law of Outer Space*, New York, 1983, pp. 77-82, etc.

[1] Of course, we by no means entertain the idea that the concepts we are going to analyse below are shared by all or most of the American international law experts.

[2] R. L. Bridge, op. cit., p. 664.

[3] The presumption of behaviour being lawful if not prohibited by law is applied with certain limitations with respect to citizens, but it has no force with respect to officials and collectives, since, in order to meet the interests of legality and human rights, this behaviour of officials and collectives must be exercised within their terms of reference (See V. N. Kudryavtsev, *Legal Behaviour: Norm and Abnormality*, Nauka Publishers, Moscow, 1982, pp. 154-159 (in Russian).

the rights of others. This is of particular importance in regard to outer space."[1] C. A. Colliard, a well-known French international lawyer, said the formula that everything not prohibited is permitted is a "particularly dangerous argument". He added: "It is well known that the freedom of action of States under the public international law of the second half of the 20th century is no longer as evident as it might appear under classical international law."[2]

The absence of specific norms regulating the behaviour of states can only testify to the neutrality of law in regard to this type of behaviour, but in no way to the legal permissiveness of such behaviour. However, in this concrete situation even such a reserved conclusion may prove to be too categorical or simply incorrect.

First, certain actions by a state, even if they are not specifically regulated by law, must not contradict the general principles of international law and the principles of a corresponding branch of international law. For instance, the principle recorded in Art. III of the 1967 Space Treaty has a direct bearing on military activity in outer space. According to this principle, states parties to the Treaty have undertaken to carry on their activities in the exploration and use of outer space, including the Moon and other celestial bodies, in conformity with international law and the UN Charter, in the interest of maintaining international peace and security and promoting international cooperation and understanding.

Second, one must reckon with the general tendency of the legal regulation of the given type of activity and with the legal consciousness of the world community. In the sphere of military activity in outer space this refers to the tendency to prevent an arms race in outer space, to limit the military use of outer space and to take at least partial measures to exclude outer space from the sphere of military preparations. This is manifested, among other things, in numerous resolutions passed by the UN General Assembly on the prevention of an arms race in outer space.[3]

In appraising the permissibility of this or that kind of behaviour by a state one must take account of the moral and ethical standards of international relations. Not only legal principles but also the human interest in self-preservation and the norms of international morality in the nuclear age of space flights necessitate states' self-limitation[4] and the elaboration of effective international measures to prevent war, whether on land, on the sea, in the air or in outer space.

[1] International Academy of Astronautics, Doc. IAA/Sci. Legal Committee/11, 1970, pp. 2-3.

[2] C. A. Colliard, "Report on Colloquium", *Proceedings of the 25th Colloquium on the Law of Outer Space*, New York, 1983, p. 332.

[3] See, for example, UN resolutions 36/99, 38/70, etc.

[4] The Soviet Government's statement on its commitment not to be the first to use nuclear weapons is one example of such self-restriction, which helps normalise the international situation.

And so we may state with certainty the categorical assertion that everything not directly prohibited in the sphere of military activity in space is permissible contradicts the general principles of international law, the tendencies of the legal regulation of this type of activity, the world legal consciousness and the norms of international morality.

The second thesis: The concepts of "peaceful" and even "exclusively peaceful" activity in outer space include military activity of a "non-aggressive character".

Let us note here that we mean not so much the old dispute about the concept "peaceful use of outer space", but a new important tendency in this dispute connected with the interpretation of clause 2 in Article IV of the 1967 Space Treaty and, accordingly, with Article III of the 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies.

Despite the fact that the aforementioned articles of international agreements contain *expressis verbis* the demand that the Moon and other celestial bodies be used "exclusively for peaceful purposes" (this demand being reinforced by a broad approximate list of the types of military activity prohibited), some American authors claim that "non-aggressive" military activity is permitted on the Moon and other celestial bodies. They advance the following arguments: 1) the list of prohibited types of military activity provided for by the agreements is exhaustive; 2) the agreements make special mention of the fact that it is permissible to use military personnel.

There is a glaring internal contradiction between these two arguments: if the list of prohibited activity is full and exhaustive, why is there special mention of certain types of activity that are permissible? Evidently, precisely because the list is not full and is of an illustrative nature, the articles of the agreements mention that it is pemissible to use military personnel and any equipment or means for peaceful, non-military activity.[1] For in the same way that it is impossible to regard as military activity army operations to give aid to a population that has suffered a natural calamity, space flights by military pilots to conduct peaceful research in outer space cannot be considered military activity.[2]

If we turn to the history of the Space Treaty, we shall find in its US exposition confirmation of the fact that Art. IV.2 must be unambiguously interpreted as a total ban on all military activity on

[1] For arguments supporting the view that this list is not exhaustive, see also *La documentation française. Problémes politiques et sociaux*, N 341, Paris, 1978, p. 13; Mango Pompeo, *Military Space Programmes*, IAF, Paris, 1982, p. 13, etc.

[2] The Antarctic Treaty of 1959 (Art. 1), which prohibits any military activity on the Antarctic continent, permits "the use of military personnel or equipment for scientific research or for any other peaceful purpose".

the Moon and other celestial bodies. In prestigious US Congress publication analysing and giving the history of the Space Treaty, the commentary on Art. IV says: "It is generally believed to be in the interest of long-range peace plans and arms control to try to ensure that the Moon and other celestial bodies will be non-nuclear, non-military zones". Further on: "The Treaty does not change the earthly situation with regard to ICBM's, but seeks to achieve on celestial bodies a form of demilitarisation which is deemed feasible from military and political viewpoints".[1]

It is now clear that during the elaboration, signing and ratification of the Space Treaty the official US position was that Art. IV.2 should preclude any military activity on the Moon and other celestial bodies.[2]

As Professor Bin Cheng, a British expert on air and space law, correctly writes, "there is no doubt that this paragraph should be interpreted in good faith, and that no activity serving a military purpose should be pursued on celestial bodies". He is also right when he adds: "The absence of a definition of the word 'peaceful' in the Treaty does not mean that the word should not be understood in its ordinary meaning."[3] Let us also add that this interpretation of the terms of the international treaty fully corresponds to the rules of construction established by the Vienna Convention on the Law of Treaties (Art. 31).

Professor Manfred Lachs made an interesting remark: "If it was intended to forbid aggressive use only, mere reference to international law and the Charter of the United Nations would have sufficed."[4]

In this connection we should note the untenability of assertions that the dividing line in the interpretation of Art. IV of the Space Treaty and Art. III of the Agreement on the Moon and generally in the interpretation of the concepts "peaceful activity" and "exclusive-

[1] *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and other Celestial Bodies. Analysis and Background Data. Staff Report Prepared for the Use of the Committee on Aeronautical and Space Sciences*, US Senate, Washington, 1967, pp. 25, 26.

[2] This is also evidenced by the statement of US President Johnson, who said in 1969: "The Treaty, following the precedent of the Antarctic Treaty reserves an unspoilt area for strictly peaceful purposes to benefit all mankind". Quoted from: "Outer Space–A New Dimension of the Arms Race", op. cit. p. 305.

[3] B. Cheng, "Le Traite de 1967 sur l'espace", *Journal du Droit international*, N 3, Paris, 1968, p. 608. In his work on the Moon Agreement (1980), Bin Cheng also stressed that Art. 3 "means total non-militarisation and the prohibition of all military activities" (*Current Legal Problems*, Vol. 33, 1980, p. 222).

[4] M. Lachs, *The Law of Outer Space. An Experience in Contemporary Law-Making*, Leyden, 1972, p. 106.

ly peaceful" activity in space runs between Western jurists and those from socialist countries. Many scholars from different countries share the opinion that the Space Treaty prohibits all military activity on the Moon and other celestial bodies.[1]

However, one must avoid getting sidetracked from the real subject of the disagreements, as sometimes happens. Hardly anyone would now question that the Space Treaty does not fully prohibit all military activity in outer space in general. The Treaty proclaims the peaceful use of outer space as a goal, as a task for the future, as a guideline but not as a legal obligation. This clearly follows from the relevant articles of the Treaty. Only Art. IV contains specific prohibitory norms relating to the placement in orbit and stationing in outer space of mass destruction weapons and to any military use of the Moon and other celestial bodies. But this in no way means that by peaceful purposes the Treaty implies military "non-aggressive" purposes and, moreover, does not mean that the norm directing the use of the Moon and other celestial bodies "exclusively for peaceful purposes" permits their use for military "non-aggressive" purposes.

The third thesis. The right to self-defence in outer space may be exercised in a preventive way in the event of an imminent attack on a space object.

Harry Almond writes: "If other states seek, threaten, or act to deny those uses of peaceful enjoyment of their space objects they (the states–*V. V.*) may resort to force to protect their rights and interests."[2] And further: "Acts or threats of aggression against a space object are hostile acts or threats of hostile acts, contrary to the norms of the Charter, giving rise to the right of self-defence."[3] Robert Bridge speaks in the same vein: "The perceived threat of attack may require United States decision-makers to negate the effectiveness of certain potential enemy space vehicles."[4]

Thus, attempts are being made to prove the lawfulness of the preventive use of force in outer space provided a state believes that there is a threat of attack on its space object. In so doing, references are made to Art. 51 of the UN Charter, which provides for the right to individual and collective self-defence to repel an armed attack. Harry Almond notes that the term "armed attack" used in the UN Charter "has gradually been liberalised to accommodate the advancing military technology". Moreover, he continues: "if such a process were not widely recognised, the Charter would either fall into desue-

[1] For the viewpoint of P. de la Pradelle (France), A. Cocca (Argentina), S. Roy Chowdhury (India), see: *International Law Association. Montreal Conference (1982).* Report of the Space Law Committee.

[2] H. H. Almond, "Military Activities in Outer Space–The Emerging Law", op. cit., p. 150.

[3] Ibid., p. 151.

[4] R. L. Bridge, *Akron Law Review*, Vol. 13, No. 4, 1980, p. 660.

tude or find itself gradually revoked under the doctrine *clausula rebus sic stantibus*".[1]

What then is the real situation from the standpoint of the UN Charter, that legal foundation of modern international relations?

The Charter (Art. 2) prohibits the threat or use of force against the territorial integrity or political independence of any state, "or in any other manner inconsistent with the purposes of the United Nations". As we have shown above, the threat of attack or an actual attack on the space object of another country are inconsistent with the purposes of the United Nations and hence they are prohibited by international law. The threat of attack on a space object involves international responsibility for the wrongdoer but does not entitle anyone to apply against him armed force by way of individual or collective self-defence. Preventive self-defence or preventive use of armed force is inadmissible under the UN Charter. The UN Charter (Art. 51) speaks in no uncertain terms about the inherent right to individual or collective self-defence only in order to repel an armed attack. This fact has been repeatedly stressed in the doctrine of international law, for instance, by well-known US experts on international law Joseph L. Kunz, Hans Kelsen and Philip C. Jessup.[2]

The principle of "preventive war" is totally alien to the UN Charter. At the very dawn of the space era, Soviet jurists noted that "the application of this principle with respect to space objects clears the way for unrestricted arbitrariness in outer space".[3]

The thesis concerning the possibility of an armed attack and other coercive actions with regard to foreign space objects on the basis of mere suspicion about the other side's intentions fully contradicts international law and is inconsistent with the right to self-defence as it is recorded in the UN Charter.

The fourth thesis. Prohibitions on and restrictions of military activity in outer space envisaged by agreements in force are no longer valid in the event of an armed conflict. Thus, H. Almond holds that all international treaties on arms control in outer space "are suspended during wartime".[4] He writes that "no legal or treaty regimes that deny states the right to conduct hostilities in outer space, or deny them the right to use force or weapons of mass destruction in that area, would be respected".[5]

Another American lawyer, A. Butler, says that "... during hostilities it would seem that each party would have the right to determine

[1] H. H. Almond, op. cit., p. 152.

[2] References to their statements on this question are to be found in Professor J. C. Cooper's work *Explorations in Aerospace Law. Selected Essays*, Montreal, 1968, pp. 415-422.

[3] *Current Problems of Space Law*, Moscow, 1963, pp. 36-37 (in Russian).

[4] H. H. Almond, op. cit., p. 150.

[5] Ibid., p. 155.

the extent to which it considered itself bound by the obligations of Art. IV (of the Space Treaty—*V.V.*). Thus, if this provision is deemed to be incompatible with the state of armed conflict, it could be suspended, allowing, for example, the orbiting or stationing in outer space of weapons of mass destruction and the militarisation of celestial bodies."[1]

We are convinced that there are no legal grounds for statements of this kind.

The book *The Law of War and Dubious Weapons*, published by the Stockholm International Peace Research Institute, notes: "The answer to the question of whether or not an arms control or disarmament treaty will only be applicable in time of peace depends on the wording of the treaty and the intention of the parties."[2] And further on: "Disarmament treaties have an impact on the laws of war in that if possession of weapons is forbidden, *a fortiori* the use of these weapons is prohibited."[3]

Let us now consider some provisions of international space law related to military activity. The Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques is an important agreement in the sphere of arms limitation, including space weapons limitation. This Convention, which came into effect on October 5, 1978, has made a substantial contribution to the prevention of the use of new means of warfare. As is evident from the title of the Convention and its text, it is intended for operation in both peace time and wartime. The prohibition of any military activity on the Moon and other celestial bodies stipulated by Art. IV of the Space Treaty provides for the exclusion of these areas of outer space from the sphere of hostilities, and their neutralisation. There is good reason why the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies prohibits, in particular, the use of mass destruction weapons on or below the Moon's surface. (Art. III.3). Is it conceivable to speak about the use of mass destruction weapons in peace time? The prohibition of the placing in orbit around the Earth of mass destruction weapons, the instalment of such weapons on celestial bodies or their deployment in outer space in any other manner (Art. IV of the Space Treaty) also remains in effect during armed conflicts.

The 1972 Soviet-US Treaty on the Limitation of ABM Systems, which is of unlimited duration, prohibits the development, testing or deployment of space-based anti-missile systems or components (Art. V). This prohibition is tantamount to a ban on their possession. Their use in both peace time and wartime is precluded.

These examples warrant the conclusion that although agreements

[1] A. J. Butler, op. cit., p. 80.
[2] *The Law of War and Dubious Weapons*, SIPRI, Stockholm, 1976, p. 60.
[3] Ibid.

concluded in the sphere of international space law are intended to regulate relations between states primarily under conditions of peaceful space activity, they provide for the exclusion of certain areas of outer space from the zone of hostilities and prohibit some types and means of warfare.

In 1984, H. Almond wrote that in the final analysis disagreements on these problems between Western and Eastern scholars are "differences in their conceptions of law, in their perspectives concerning its application and enforcement, in the elements that they believe are embraced or combined to provide the basis for law, and so on".[1] In this context we shall try to analyse, at least in brief, the sources of our real differences on certain conceptual questions.[2]

Prohibition on the Threat or Use of Force as a Peremptory Principle of Modern International Law

Harry Almond sees the main "critical policy issue in space law" in the classification of "those uses of force that are permissible and those that are impermissible in outer space". He advances two basic propositions on this question: 1) there is no specific agreement regulating the use of force in outer space; 2) it is as yet impossible to identify a standard distinguishing between impermissible and permissible uses of force in relations between states.

And so, Professor Almond sees the "critical" problem of international space law not in the creation of a legal regime precluding the possibility of using force in and from outer space (though, in our opinion, states' international legal policy in space activity should be oriented toward this), but in the classification of permissible and impermissible uses of force in outer space.

Indeed, there is no special international agreement on the use of force in outer space. But the point is that there is no need for such an agreement. Practice dictates the need for a diametrically opposite agreement, one on the non-use of force in and from outer space, one that would specify and develop the principle of international law regarding outer space and activity therein. It would be extremely odd and unnatural for states to set themselves the task of elaborating an agreement sanctioning the use of force.

As for the statement on the absence of a criterion for differentiat-

[1] H. H. Almond, "Toward Shared Interpretations of the Critical Policy Dimensions of Space Law", *Proceedings of the 26th Colloquium on the Law of Outer Space*, New York, 1983, pp. 271-286.

[2] As we have said, unlike H. Almond we do not draw a distinction on these problems between the conceptions held by Western and Eastern scholars, since far from all Western jurists share his views.

ing between the permissible and the impermissible, the lawful and the unlawful use of force, if complied with, it is tantamount to rolling back international law at least half a century. The introduction of the principle of prohibiting aggressive war and of the broader principle of non-use or threat of force was a historic gain for civilization. The rejection of these principles would be an unpardonable backward step, even if we take into account the frequent cases of their infringement.

The UN Charter quite clearly formulates one of the fundamental principles of contemporary international law: "All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations" (Art. 2.4). The UN Charter equally clearly defines situations in which a state or states may apply armed force against another state or states, in other words, establishes a criterion of legitimate use of armed force. These situations presuppose the participation of states in the UN-sponsored measures taken by decision of the Security Council in order to prevent or eliminate a threat to peace, to suppress acts of aggression or other breaches of the peace (Arts. 39, 41 and 42 of the UN Charter), and also to exercise the right to individual or collective self-defence against an armed attack (Art. 51).[1]

Professor Almond interprets in his own way the absolutely clear and unambiguous provisions of the UN Charter and erodes their normative content, their unconditionally binding nature for states. He introduces his own, vague and subjective "criteria" of the states' behaviour that in point of fact legalise any practice if it may be imposed by force. He treats Paragraph 4 of Article 2 in the Charter merely as a "call" to refrain from the use of force, that is, as a wish or recommendation rather than an absolutely mandatory norm of behaviour. He lists preventive self-defence, "humanitarian intervention" and armed reprisals long prohibited by international law as ostensibly permitted types of the use of force.

While making common cause with the proponents of the theory of the so-called "intermediate status" between war and peace, Almond states that "the legal regulation of international coercion is a process that extends from the period identified as 'peace' into the period identified as 'war' among states. In this perspective, coercion may occur, in varying degrees of intensity, involving the use of force, or other modalities, in the relations among states." He adds elsewhere that legal restrictions on the use of force, including war, are commensurate with the possibilities of coercion in order to observe them and

[1] Here we do not deal with special cases of the lawful use of force, provided for by Arts. 53, 106 and 107 of the UN Charter, against the aggressors during World War II.

with sanctions applicable for the purpose of their observance.

Of course, there is nothing new in either the conception of an "intermediate status" between war and peace, which has nothing in common with existing international law, or the attempts to "legally" substantiate the "positions-of-strength" model of international relations, which are also far from international law. It is noteworthy that they fall on fertile soil and try to sink roots in international law in periods of sharp deterioration in the international situation. That was the case in the 1960s, in the period of the cold war, when the theory of "an intermediate status" was advanced in detail, and that is the case today.

As for the appraisal of the conception of "an intermediate status", we shall cite the opinion of Professor Manfred Lachs, former President and now Judge of the International Court of Justice. In 1954 he wrote: "International law neither knows nor recognises any intermediate status between war and peace. The strict delineation of these two institutions was recognised long ago, at a time when war was a lawful means of settling international conflicts. This division is even more justified today, when aggressive war is prohibited and when the dividing line must be a border between lawfullness and lawlessness."[1]

Some Western experts in international law are inclined to interpret the principle of non-use of force as having little effect or actually being inoperative. They regard it as a principle of "UN law" and not as a principle of general international law, the former supposedly still being customary law, etc.[2] But we know that this is one of the basic principles of modern international law. Suffice it to recall that this principle is highlighted in the Declaration on Principles of International Law dealing with friendly relations and cooperation between states under the UN Charter. This Declaration was unanimously adopted by the General Assembly in 1970. It points out specifically that the threat or use of force are breaches of *international law and the UN Charter* (emphasis added–*V. V.*) and thus settles the question as to whether this principle belongs to "UN law" or general international law.

Many leading experts in international law stress the special importance of this principle in contemporary international law. In particular, Jimenes de Arechaga, ex-President of the International Court of Justice, has said: "The basic provision of the UN Charter is expressed in Art. 2.4, which prohibits the threat or use of force in international relations. This is the principal norm of contemporary international law and the cornerstone of peaceful relations between

[1] M. Lachs, *Uklady Indochinskie, Geneva, 1954*, Warszawa, 1955, s. 226.

[2] For more details on this problem, see G. I. Tunkin, *Law and Force in the International System*, Progress Publishers, Moscow, 1985, pp. 225-230.

states."[1] The British jurist, Professor Ian Brownlie, notes that there are many outstanding problems relative to the principles of *jus cogens* and adds: "However, certain portions of *jus cogens* are the subject of general agreement, including the rules relating to the use of force by states, self-determination, and genocide."[2] Professor G. Tunkin of the Soviet Union writes: "The use of force that is at variance with the UN Charter provisions is not only a violation of the UN Charter, but also of international law in general."[3]

We cannot but agree with Louis Henkin, American lawyer, who wrote: "After hundreds of years, nations finally agreed on a legal principle against national force in order to add to the influence of law as a further deterrent to war. It would be tragic if nations allowed force to descend again to the level of national political interest as each nation saw that interest."[4]

We can draw only one conclusion from this: the threat or use of force in violation of the UN Charter both on the Earth and in outer space is an act contrary to law, prohibited by the peremptory rule of international law and involving relevant responsibility. The major task of international law as a whole and international space law as a branch of it is to make more effective the principle of prohibiting the threat or use of force, in particular, by elaborating a general treaty and special treaties and agreements that would amplify and concretise this principle.

Law, Politics and Force in International Relations

In fact, our disagreements with Professor Almond and those who share his view go far beyond the interpretation of certain provisions of international space law and even such a central principle of international law as that prohibiting the threat or use of force. The root of these disagreements lies in the understanding of the nature of international law and its place and role in today's international relations.

How does Almond see the correlation between international law and a nation's policy?

Having posed a rhetorical question: "Should our law impose

[1] E. Jimenes de Arechaga, *El derecho internacional contemporaneo*, Madrid, 1980, p. 108.

[2] I. Brownlie, *Principles of Public International Law*, 3rd ed., Oxford, 1979, p. 515.

[3] G. I. Tunkin, *Theory of International Law*, p. 304. See also other works by Soviet scholars, *viz.*, D. B. Levin, *International Law and the Maintenance of Peace*, Moscow, 1971; V. I. Menzhinsky, *Non-Use of Force in International Relations*, Moscow, 1976 (all in Russian).

[4] L. Henkin, *International Law and the Behaviour of Nations*, Recueil des Cours. Tome 114. Academie de Droit International. Leyden, 1965, p. 276.

higher standards than the states themselves perceive to be applicable?", he answered it in the following way: "To propose law that deviates from this practice would tend to be unrealistic and illusory". Worthy of note is the fact that this statement is about practice in general and therefore about any actions by states not bound by the legal or moral standards of proper behaviour. Almond believes that it would be "unrealistic and frustrating for the effectiveness of law" to suppose that states "in their relations or activities in outer space or elsewhere should be compelled to conform to an idealistic standard imposed by law."

He outlines his conception of the role played by international agreements in this way: "In fact, and in reality, our agreements will most effectively serve us when they serve and are designed to serve, and realistically pace, the changing policies, practice and expectations of the states involved." And further on: "... prescriptive language of treaties, alone, is unable to provide effective controls over the practice of states. State practice remains the determining element in shaping law and its controls."

Thus, the author proclaims the full priority of politics (practice) over law at the stage of both law-making and law enforcement. In other words, we are offered a model according to which international law must give way to politics or practice not bound up by legal rules in order not to become "illusory", "idealistic" and "ineffective". But in fact the "effective" international law, as Almond understands this concept, would have to be consigned to the dump of history, since it would fully lose its relevance in the international system.

Since in Almond's model of the correlation between law and politics the odds are in favour of states' policies (practice), it is interesting to cite his interpretation of the nature of these policies in present-day international relations. He writes: "It is essential to perceive the practice of states realistically—and in these perceptions to recognise that military measures are and will remain for the immediate future the means—throughout the continuum of relations among states from 'war' to 'peace'—a major instrument of strategic policy, aimed at influencing and improving a state's strategic position." He emphasises that "law is expected to serve more effectively to identify, than deter, and perhaps prevent, the impermissible uses of force."

In the concluding part of his article the author speaks about "communication" between states "by developing, testing and deploying new weapons, new weapons delivery systems, and projecting new weapons technologies".

It is clear that under the guise of a "realistic" appraisal of international relations we are being offered the same concept of an "intermediate status" between war and peace in which there is no place for law, where relations between states are based on the dominance of force and power politics accompanied by an unrestrained arms race, and where states build "communication" among themselves on

the basis of the development, testing and deployment of new weapons systems and their delivery vehicles.

Since Almond backs up his view with quotations from works by M. McDougal, who initiated the concept of "policy-oriented international law" during the cold war years, we shall cite the opinion of Professor Tunkin, a Soviet authority on international law, who said: "Objectively McDougal's complicated concept seems to remove international law from the path of power politics.

"At a general theoretical level that concept is logically inconsistent because it merges international law with politics. In fact while international law, just as national law, is closely associated with politics, it is not a part of politics. Its principles and norms are created in the course of relations among states on the basis of agreements that are influenced by their foreign policies. Once they are crystallised in the kettle of political relations among states, norms of international law become a special category, a legal category. They acquire an autonomous existence, and even though they can never be separated from politics, they become a special social phenomenon, distinct from politics yet not losing its political significance."[1] He also adds: "The specific characteristic of international law is that, as the outcome of agreements among states, it defines the framework of permissible or appropriate decisions by establishing the rights and duties of states."[2]

The Need for Interpretation of Treaties in Good Faith and for Their Strict Observance

In his article "Toward Shared Interpretations of the Critical Policy Dimensions of Space Law" Professor Almond claims that "the outer space treaties presently before us have yet to be fully implemented". We cannot but agree with this conclusion. But what does it mean to implement treaties? It means that states' policies, their practical actions and decisions must strictly conform to their treaty obligations and that states in their actions and decisions should not exceed the limits of proper behaviour established by treaty obligations.

The determination of the framework of proper behaviour established by treaties presupposes their interpretation in good faith with a view to ascertaining their true meaning and content. It is common knowledge that of decisive importance is the interpretation given to a treaty by its parties. A great role is played, however, by so-called doctrinal interpretation which to a certain extent influences the interpretation of the treaty by its parties.

We have to recall these well-known truths because the concep-

[1] G. Tunkin, *Law and Force in the International System*, Progress Publishers, Moscow, 1985, p. 190.

[2] Ibid., p. 185.

tions of "political realism" and "juridical realism", which are current in international relations and international law and which relegate international law to the background or assign to it the role of a servant of power politics, lead to such an "interpretation" of operative treaties under which their principles and norms are turned inside out or made meaningless altogether. Thus, the principle of prohibiting the threat or use of force is almost turned by the proponents of these conceptions into the principle of applying the threat or use of force, and the principle of the exclusively peaceful use of the Moon and other celestial bodies—into the principle of the military use of the Moon and other celestial bodies. Moreover, they substitute the right to preventive self-defence for the right to self-defence against armed aggression. They also claim that the ABM Treaty provisions directly prohibiting the development, testing and deployment of certain anti-ballistic missile systems in fact "sanction" their development.

Acting under the cover of "realism" and a "realistic appraisal" of international law, which they understand in their own way, the proponents of these conceptions propose to replace the universally recognised rules of interpretation of treaties set forth in Article 31 of the Vienna Convention on the Law of Treaties with essentially new rules. What are these rules? Lawyers, they say, should not rely on a "literal" interpretation. They propose to lend "a relative meaning" to the concept "peace" or "peaceful", perhaps in accordance with the theory of an "intermediate status" between war and peace. They claim that one should proceed from the fact that the concepts "aggression" and "self-defence" retain "an obvious indefiniteness and embrace conflicting political courses". They propose to interpret the right to self-defence not in accordance with the UN Charter, but in accordance with "the rapidly changing military technology, the velocity of the weapons delivery systems, and weapons' destructive power". They consider axiomatic the provision that "coercion (including the use of force) will remain a means of projection and defence of state policies and interests".

The interpretation that follows from their attitude to international law as "a process of claims and counter-claims of states at this particular juncture" leads "to a result which is manifestly absurd or unreasonable", according to Art. 32 "b" of the Vienna Convention on the Law of Treaties. This interpretation cannot and will not contribute to the implementation of any treaties, including space treaties; on the contrary, it is aimed at legalising breaches of treaty obligations and at encouraging anarchy in international politics and relations.

We do not at all believe that the practical implementation of a treaty has no relevance in its interpretation. Involved in this picture is not any practice nor the practice of a particular state, but the practice "which establishes the agreement of the parties regarding its interpretation" (Art. 31.3(b) of the Vienna Convention). Of decisive importance here is the immutable rule of international law which

says: "A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose" (Art.31.1 of the Vienna Convention).

4. US "Strategic Defence Initiative" and International Law

The Pentagon, the State Department and the US President himself have repeatedly stated officially that "the SDI research programme is being conducted in a manner fully consistent with all US Treaty obligations".[1] Interviewed by Soviet newsmen, President Reagan declared: "We will not be violating this (ABM–*Ed.*) Treaty at any time."[2]

But in terms of international law, how do these US commitments really correlate with the SDI and the practical steps taken to put it into effect?

The ABM Treaty

Ever since it came into force in 1972, the Treaty on the Limitation of Anti-Ballistic Missile Systems has been universally considered a cornerstone of the entire system of international agreements on arms limitation and reduction.

The special role played by this treaty of unlimited duration stems from the organic link between strategic defensive and offensive arms. The existence of this interrelationship and dependence is confirmed in the Preamble to the ABM Treaty, which states that "effective measures to limit anti-ballistic missile systems would be a substantial factor in curbing the race in strategic offensive arms and would lead to a decrease in the risk of outbreak of war involving nuclear weapons".

The Treaty's purpose, as made clear by its very title, preamble and main provisions, is to keep both sides from developing anti-ballistic missile systems. The crucial commitment is "not to deploy ABM systems for defence of the territory of its country and not to provide a base for such a defence" (Art. 1.2).

The official basic idea and final objective of the SDI are diametrically opposed to the purposes of and the commitment assumed under the ABM Treaty. The Directive signed by the US President on March 23, 1983 on the Strategic Defense Initiative defined its

[1] *Report to the Congress on the Strategic Defense Initiative*, 1985, Department of Defense, Appendix B, p. 1.

[2] *Weekly Compilation of Presidential Documents*, November 11, 1985, Vol. 21, No. 45, p. 1346.

objective as the elimination of the danger posed by nuclear ballistic missiles.[1] This is an attempt to create an "anti-ballistic missile shield" covering the entire territory of the United States, a move prohibited under Art. I of the Treaty.

Common to all the official statements by the SDI advocates is the claim that the present programme is no more than a set of research projects and that the decision on whether to deploy the system will not be taken some time before the 1990s. So at this stage, they claim, the SDI programme does not violate the Treaty on the Limitation of Anti-Ballistic Missile Systems. But what they try to present as innocent "research" is in fact an undertaking unprecedented in scale, cost and concentration of scientific and technical efforts aimed at developing weapons of a new type—space strike arms. Simultaneously the SDI is a programme of stage-by-stage creation of what the Treaty terms a "base" for the ABM defence of a country's territory. The numerous "technologies", "devices", "components", "models" and "mockups" that are being developed and tested or will be in the near future in keeping with the SDI programme will serve as the building blocks for that base.

In addition to the general ban on the deployment of an ABM system for the defence of a country's territory and on the creation of a base for such defence, the Treaty and the July 3, 1974 Protocol to it set specific quantitative, qualitative and geographical limitations to ABM defence measures. The parties to the Treaty agreed to have only one ABM system deployment area with a definite number of ABM launchers and anti-ballistic missiles at launch sites.

Of very great importance among all these specific commitments is the obligation "not to develop, test, or deploy ABM systems or components which are sea-based, air-based, space-based, or mobile land-based" (Art. V). In obvious violation of this obligation the SDI aims to set up global ABM system with space-based elements.

Resorting to legal chicanery to circumvent the clear and unambiguous ban on the development of space-based ABM systems and components, the US Administration is seeking to prove that work under the SDI programme is not at variance with the provisions of Art. V of the Treaty. It claims, first, that the programme envisages only some preliminary stages in the creation of elements of a space-based system, and, second, that these elements are not covered by the term "system components" used in Art. II of the Treaty.

A thorough legal analysis of the Treaty shows that such attempts are doomed to failure. Apart form the fact that it is impermissible to interpret individual words, sentences or even whole articles outside the context of the Treaty's general meaning, let us note here that Art. V does not merely prohibit some "advanced" stages in the de-

[1] *National Security Decision Directive 85*, March 23, 1983.

velopment of space-based ABM systems and components, but rather prohibits *ab initio* their development in general. If, however, we take the SDI programme for the next few years, we shall see that even official Pentagon reports to the Congress envisage not only laboratory research, as US officials claim, but the development and testing of the key elements of the future system. The 1985 Pentagon Report speaks of tests of experimental devices to demonstrate technical feasibility and gather data prior to reaching the stage of prototype or bread-board model.[1] Some of these "tests" and "demonstrations" have already been planned for as early as 1987 onward.

The SDI therefore violates not only that section of Art. V of the Treaty which bans the creation of space-based ABM systems but also the one prohibiting the testing of such a system and its components. Substitution of the term "demonstration" for the term "testing" in no way changes the substance of the matter. After looking into the matter, a team of prominent US experts correctly pointed out that "'demonstration' is a term the Pentagon often uses in describing activities that the ABM Treaty language terms 'tests' ".[2]

This substitution of the words "subcomponents", "devices", etc., for the term "components" is nothing but an exercise in verbal trickery to dodge the ban on the creation and testing of components of a space-based ABM system.

In the opinion of the US experts mentioned above, the narrow interpretation of the term "components" "ignores the history of the Treaty negotiations" and rests "on an extremely limited conception of the nature of the components that constitute an ABM system".[3]

From the very outset the aim of the SDI has been to find ways and means to create the system banned by the Treaty. The programme as a whole, and not just some of its future stages, contravenes the Treaty. Already today the programme is in glaring violation of Arts. I, V, IX, X of the ABM Treaty. At its subsequent stages the programme will come increasingly into conflict with the very letter of the Treaty and with its specific bans.

The USA's growing pressure on its NATO allies to join the SDI (some of them have already done so) violates Arts. IX and X of the Treaty, which prohibit the transfer to other states of ABM systems or of their components that are limited by the Treaty, and the assumption of international obligations that would be inconsistent with the Treaty.

[1] *Report to the Congress on the Strategic Defense Initiative*, 1985, op. cit.

[2] T. K. Longstreth, J. E. Pike, J. B. Rhinelander, *The Impact of US and Soviet Ballistic Missile Defense Programs on the ABM Treaty*, 3rd ed., March 1985, p. 15.

[3] Ibid., p. 29.

"New Interpretation" of the ABM Treaty

In anticipation of the Geneva summit in 1985 certain US quarters attempted to encourage a more "liberal" interpretation of the Treaty by the Washington Administration.

The Pentagon's "new reading" of the Treaty and of its history has produced a new version which says that the development and testing of ABM systems based on "new physical concepts" and probably even the deployment of such systems are not banned by the Treaty. Robert McFarlane, former national security adviser to the US President, publicly stated that the development and testing of space-based ABM systems involving new physical concepts were "approved and authorised" by the Treaty.[1]

It was only after bombs began exploding in Europe and in Congress[2], that, under public pressure at home and from its worried NATO allies, the US Administration decided to adhere to its old interpretation of the Treaty for tactical reasons and as a "practical policy". But high-ranking US officials, including the President himself, the Secretary of State, and special adviser to the President and Secretary of State on arms control Paul H. Nitze, maintained that in their view the Treaty was open to a new, "broader interpretation",[3] thereby implying that they reserved the right to return to that interpretation when they felt the time was right.

What is the basis for the assertions about a "broader interpretation" of the Treaty?

Reference is made to an agreed statement appended to the Treaty at its signing—the so-called D-Statement, which says that in order to ensure fulfilment of the obligations not to deploy ABM systems and their components except as provided for in Art. III of the Treaty, the parties agree that in the event of future development of ABM systems based on other physical principles and including components capable of substituting for ABM interceptor missiles, ABM launchers, or ABM radars, are created in the future. Specific limitations on such systems and their components will be subject to discussion in accordance with Art. XIII and agreement in accordance with Art. XIV of the Treaty.

The D-Statement is interpreted as allowing for the unlimited development and even deployment of ABM systems based on new physical concepts (lasers, particle beams, etc.), but such an interpre-

[1] *The Washington Post*, October 22, 1985.

[2] According to press reports, six former US Defence Secretaries made a joint statement calling on the US Administration to avoid actions that could undermine the Treaty.

[3] For the interview given by the US President to a group of Soviet newsmen, see *Izvestia*, November 4, 1985; Paul H. Nitze, "SDI: Its Nature and Rationale", US Department of State, Bureau of Public Affairs, Washington, *Current Policy*, No. 751, p. 2.

tation is diametrically opposed to the meaning originally intended. The Statement in fact supplements Article III of the Treaty, which stipulates the agreed limited deployment areas for the land-based non-mobile ABM systems of each party to the Treaty, and allows for the possible appearance of ABM missiles based on new physical concepts only within these agreed areas and for land-based non-mobile systems.

At the same time, such new land-based facilities may be deployed in the area authorised by the Treaty only after consultations are held between the parties on their specific limitations, and agreement is reached on appropriate amendments to the Treaty as provided for by Arts. XIII and XIV. In other words, the purpose of the Statement is to strengthen the provisions of the Treaty banning the deployment of any large-scale ABM systems and not to revoke the bans envisaged in Arts. I and V in respect to ABM systems and their components based on new physical concepts.

There can be no other interpretation of D-statement, and it is not only the Soviet side[1] which insists that a so-called "liberal" or "broader" interpretation of the Treaty is impermissible. Prominent US personalities who were directly involved in negotiating the ABM Treaty also object to such an approach. These include Gerard Smith and John B. Rhinelander, the head and the legal adviser, respectively, of the US negotiating team.[2]

Multilateral Treaties

The Star Wars programme undermines not only the Soviet-American ABM Treaty, but also a number of multilateral treaties that have long been important mainstays of modern law and order on the Earth and in outer space.

With over 80 signatory states, the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies plays a key role in the legal regulation of space activities.

Those who back the SDI programme like to emphasise that it is meant to make use of non-nuclear defensive weapons, but lasers pumped by nuclear explosions are also being developed and tested as part of that programme. The stationing of such explosive devices

[1] See, for instance, the article by Marshal S. L. Sokolov, USSR Minister of Defence, entitled "To Preserve What Has Been Achieved in Strategic Arms Limitation", *Pravda*, November 6, 1985; and the Press Conference given by G. M. Kornienko, First Deputy Minister of Foreign Affairs of the USSR, and Marshal S. F. Akhromeyev, Chief of the General Staff of the USSR Armed Forces, *Pravda*, October 23, 1985.

[2] *Wall Street Journal*, October 22, 1985.

in outer space will contravene Art. IV of the Space Treaty. There is good reason why US experts classify nuclear-pumped X-ray laser systems as a "new type of nuclear weapon".[1]

Nuclear tests in outer space to develop nuclear-pumped lasers are precluded by the 1963 Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water. Over 100 states other than the USSR and the USA are parties to that Treaty, Art. I of which makes it incumbent on them "to prohibit, to prevent, and not to carry out any nuclear weapon test explosions, or any other nuclear explosions ... in the atmosphere, beyond its limits, including outer space..."[2]

As for the Space Treaty, not only the development of nuclear-pumped X-ray lasers along SDI lines but also the programme as a whole defy that Treaty, which is the basis for broad and mutually beneficial cooperation of all states in the peaceful exploration and use of the Universe.

The Star Wars programme poses an equal danger to the 1968 Nuclear Non-Proliferation Treaty signed by the overwhelming majority of states. The Star Wars plans are directly responsible for the threat of a so-called vertical spread of nuclear arms, i.e. their stationing in outer space. Leading inevitably to an escalation rather than a curbing of the arms race in all types of weapon and in all directions, the programme to develop space strike arms openly contradicts the US commitment to negotiate in good faith effective measures to end the nuclear arms race in the near future and start nuclear disarmament. Let us recall that the US has assumed similar commitments in a number of other bilateral and multilateral agreements. The SDI programme is like a mine under the entire system of arms limitation and reduction talks.

The SDI and Principles of International Law

The fulfilment in good faith of international obligations is a basic and long-standing principle of international law. Without strict adherence to this principle, there can be neither international law nor normal, orderly relations between states. This principle has been fixed in the UN Charter, the 1969 Vienna Convention on the Law of Treaties, the 1970 Declaration on Principles of International Law, the 1975 Final Act of the Conference on Security and Cooperation

[1] T. K. Longstreth, J. E. Pike, J. B. Rhinelander, op. cit., p. 64.

[2] The development and improvement of the nuclear-pumped X-ray lasers at the test range in Nevada violate the ABM Treaty ban on tests for ABM purposes anywhere except at test ranges declared in advance and agreed upon by the parties (Art. IV of the Treaty).

in Europe, and a number of bilateral treaties, including those signed by the USSR and the USA.

The fulfilment in good faith of obligations arising from the generally recognised principles and rules of international law, and from the treaties signed by the Soviet Union is a fundamental principle inscribed in the USSR Constitution (Art. 29). The new edition of the CPSU Programme adopted by the 27th Congress says in this respect: "The Party will make every effort to ensure that questions of arms limitation and averting the threat of war are tackled through honest and strictly observed agreements on the basis of equality and equal security of the sides..."[1] That is evidence of the significance which the USSR attaches to arms limitation and reduction.

The most important requirement ensuing from that principle is good faith in keeping treaty obligations. This crucial rule of international law is ignored by the USA, which grossly violates these legal instruments, while making numerous top level statements about its adherence to the ABM Treaty and other international accords on arms limitation and reduction.

The SDI programme also contradicts another major principle of international law and Soviet-American relations—that of equality and equal security. It emerged after World War II in connection with the disarmament problem and became legally binding in Soviet-American relations after the signing in 1972 of the declaration on the Basic Principles of Mutual Relations between the USSR and the USA. The document reads: "The prerequisites for maintaining and strengthening peaceful relations between the USSR and the USA are the recognition of the security interests of the Parties based on the principle of equality and the renunciation of the use or threat of force." And further on: "Both sides recognise that efforts to obtain unilateral advantage at the expense of the other, directly or indirectly, are inconsistent with these objectives."[2]

The principle of equal security is also enshrined in other Soviet-American and multilateral treaties and is now legally binding on the parties to them. The principle applies primarily to disarmament, but its importance goes far beyond that sphere of international relations. International security that is reliable and equal for all states is a goal towards which the Soviet Union has been working persistently and resourcefully. Such security must rest on political decision-making rather than on the development of new weapons. The Resolution of the 27th CPSU Congress on the Political Report of the CPSU Central Committee emphasises that "present-day armaments are of such a kind that no country can hope to defend itself only by military-technical means, by creating even the most powerful defence since

[1] *The Programme of the Communist Party of the Soviet Union*, Moscow, 1986, p. 77.

[2] *New Times*, No. 23, June 1972, p. 39.

not only nuclear war itself, but also the arms race cannot be won."[1]

The SDI quite obviously aims to subvert the present strategic stability and create unilateral military advantages for the US, which is why it is incompatible with the principle of equality and equal security. Behind that programme's pseudo-peaceful and defensive front, we see the intention of certain US quarters to gain the capability to deliver a disarming nuclear strike at the Soviet Union under the protection of an ABM "shield". The anti-ballistic missiles envisaged by the SDI programme can be used to hit targets in outer space, in the atmosphere and on the Earth. This means that they are space weapons in the strict sense of the term. Space strike weapons will not strengthen anyone's security. On the contrary, they will build up distrust between countries and greatly diminish their security. This will inevitably result in an unbridled arms race in both the defensive and offensive fields, and undermine the arms limitation and reduction process.

Announcing the SDI during his address to the nation, President Reagan declared that its objective was to render "nuclear weapons impotent and obsolete".[2] The Soviet Union has advanced a simple, radical and effective way of solving this problem—the complete elimination of nuclear weapons before the end of the century.[3] If the real intentions of the US Administration were not at variance with its public statements, there would be no reason at all to reject the Soviet proposal that makes it possible within a historically short period to eliminate mass destruction weapons without opening up a new, space dimension of the arms race with its unpredictable consequences.

The SDI is a concerte effort to secure strategic and military superiority for the United States. It is a continuation of the position-of-strength policy in international affairs and does not proceed from legal principles; it means total disregard for the US commitments assumed under international law and for international security.

This position of the US was confirmed at the Soviet-American summit meeting in Reykjavik where the USSR put forward new compromise proposals on the reduction and later full liquidation of nuclear arms.

The Soviet proposals were accepted by the US side to the talks, but final agreement was torpedoed by the US insistence on giving up the ABM Treaty. It is this position of the USA that prevented the top representatives at the Reykjavik meeting from outlining the

[1] Mikhail Gorbachev, *Political Report of the CPSU Central Committee to the 27th Party Congress*, Moscow, 1986, p. 148.

[2] *Weekly Compilation of Presidential Documents*, Vol. 19, No. 12, March 28, 1983, p. 448.

[3] See Mikhail Gorbachev, *Selected Speeches and Articles*, Progress Publishers, Moscow, 1986, p. 467.

paths of ensuring international security and nuclear disarmament and of blocking new spirals in the arms race.

The effective treaties and agreements dealing with the states' space activities have introduced a number of important bans and restrictions on the states' military activity in outer space in both peace time and wartime. Unfortunately, these bans and restrictions are still far from being a complete system of measures precluding any military use of outer space and for this reason require further development and supplementation. But even in their present form they are an important deterrent factor aimed against the militarisation of outer space. The general principle of prohibiting the threat or use of force, which is extended to outer space as well, and the partial measures established by agreements prohibiting and limiting arms and military activity in outer space and on celestial bodies must be strictly and absolutely observed. A major task facing international law is to close the door to weapons in outer space once and for all.

Chapter 2

SOME PROBLEMS IN THE DEVELOPMENT OF INTERNATIONAL SPACE LAW

1. Exploration of the Earth from Outer Space

The use of space vehicles for the exploration of the Earth's natural resources opens up enormous possibilities in many spheres of human endeavour and is of great benefit to agriculture and forestry, hydrology and oceanography, geology and mineralogy, geography and cartography.

For instance, a task facing agriculture is to obtain regular information about crops and pastures, the scale and nature of plant disease.

Space exploration helps geologists to discover geological structures containing minerals and to make a more profound study of the earth crust and the distribution of mineral and other resources.

Vast opportunities also open up for compiling detailed maps of various areas of the Earth's surface. This is important because a sizable part of the Earth's surface has not yet been properly mapped.

Hydrologists are able more precisely to define the size of snow-bound areas, the moisture content in soils, and the intensity of precipitation. Space observation makes it possible more accurately to forecast a spring flood run-off, which is of great importance for raising crop yields and the effectiveness of hydropower stations, and for flood control.

Space instruments are now used in oceanography to determine the state of the sea surface, to take its temperatures and to obtain a picture of sea currents and watch icebergs; in future, they will be more widely used in fishery.

The foregoing examples do not by far exhaust the fruits of the use of space technology to study the Earth. For instance, this technology is of great importance for environmental control. A broad complex of ground, air and space experiments and studies will be required to ascertain all potentialities for the study of the natural environment from outer space and to work out new methods of research.

In its report on the work of its third session the UN working group defined the remote sensing of the Earth from outer space as "a methodology to assist in characterising the nature and condition of the natural resources, natural features and phenomena, and the

environment of the Earth by means of observations and measurements from space platforms."[1]

The system of remote sensing, both experimental and operative, consists of space and ground sectors. The space sector includes spacecraft using photographic and TV equipment, measuring instruments and facilities for the transmission of information to the Earth. The ground sector consists of stations receiving this information and facilities for processing, deciphering, storing and disseminating it.

The natural environment is explored by instruments that obtain photographic and TV pictures of various land and atmospheric structures in ultraviolet, visible, infrared and microwave bands of the spectrum.

Different spacecraft—artificial earth satellites, manned orbital spaceships and stations—are used to study the natural environment from outer space. In addition, aircraft and ground-based observation facilities are employed. Only the integrated utilisation of all these means enables specialists to obtain the most reliable results.

Special satellites for surveying the Earth's natural resources are being developed by a number of countries and by some intergovernmental organisations. The first experimental satellite of this kind was launched by the US on July 23, 1972. Originally it was called ERTS but in 1975 it was renamed LANDSAT-I. Later, the US launched a series of other special satellites to explore the Earth and its oceans. It also makes wide use of military satellites for this purpose.

On July 9, 1974, the Soviet Union launched its first Meteor satellite, which carried instruments for the survey of some characteristics of the Earth's surface in addition to the standard meteorological equipment.[2] Information received from this satellite was processed in the USSR Hydro-Meteorological Centre, and in the State Research Centre for the Survey of the Environment and Natural Resources. That began the functioning of Soviet special experimental satellites to study the Earth's natural resources. A vast amount of work associated with the study of the natural environment is being done in the Soviet Union through manned orbital stations.

The use of data received from space confronts the world community with some legal problems. In capitalist countries such problems arise even vis-à-vis their own territory. Small US companies are deeply perturbed by the fact that they may be at a disadvantage as compared with large monopolies, since the latter will be able more rapidly and in a better way to process and use satellite information about natural resources. A reflection of this is the discussion started in US legal literature in the early 1970s of the question as to how to give the large and small companies equal rights in the use of satel-

[1] UN Doc. A/AC. 105/125, 13 March 1974, p. 5.
[2] *Pravda*, 11 July 1974.

lite information about the Earth's natural resources.[1]

But the international legal aspect of this problem linked with the receipt and dissemination of information about foreign territory is of a much more serious nature. The importance of the problem becomes evident in connection with the threat of exhaustion of some types of natural resources and also in connection with the use by the US of satellite information to the detriment of the defence interests of other states.

Some American lawyers hold that apart from moral considerations states are not bound by any obligations with respect to the commercial use of information about foreign nations' natural resources obtained with the aid of spacecraft, and are not committed even in those cases when they intend to acquire foreign territory with a view to extracting minerals.

US specialists in space law S. Houston Lay and Howard J. Taubenfeld write: "International law appears to be developing in such a way as to allow the acquiring nation to utilise information (space information about foreign territories—*V. V.*) gathered for its own economic and commercial purposes... In the absence of agreements requiring the sharing of commercial and economic information obtained through reconnaissance from space, it is doubtful that any legal obligation to share exists."[2] Even if an agreement is concluded on acquiring territory for the purpose of extracting minerals discovered on the basis of satellite information, the authors hold that there are no legal obligations to make such information available to states on an equal basis.

They completely ignore both the provisions on the states' sovereign rights to their natural resources, recorded in several resolutions of the UN General Assembly, and the principles set out in the 1967 Space Treaty.

The preamble to the 1967 Space Treaty says: "The exploration and use of outer space should be carried on for the benefit of all peoples, irrespective of the degree of their economic or scientific development." Art. 1 of the Treaty reiterates this highly important provision: "The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development..."

As far back as December 1952 the UN General Assembly adopted a resolution which proclaims that "the right of peoples freely to use and exploit their natural wealth and resources is inherent in their

[1] J. Alexander, "Two Emerging Problems of Space Law Concerning Remote Sensing Satellites", *Proceedings of the 12th Colloquium on the Law of Outer Space*, Davis, California, 1970, pp. 258-263.

[2] S.H. Lay and H.J. Taubenfeld, *The Law Relating to Activities of Man in Space*, Chicago and London, 1970, pp. 187-188.

sovereignty and is in accordance with the purposes and principles of the Charter of the United Nations." This resolution urged "all Member States to refrain from acts, direct or indirect, designed to impede the exercise of the sovereignty of any State over its natural resources."[1]

Subsequently the General Assembly has repeatedly reiterated in its resolutions the permanent sovereignty of states over their natural resources. Thus, Resolution 1803 (XVII), adopted in 1962, says: "2. The exploration, development and disposition of such resources should be in conformity with the rules and conditions which the peoples and nations freely consider to be necessary or desirable with regard to the authorisation, restriction or prohibition of such activities."

"7. Violation of the rights of peoples and nations to sovereignty over their natural wealth and resources is contrary to the spirit and principles of the Charter of the United Nations and hinders the development of international cooperation and the maintenance of peace."[2]

The authority of these documents in international relations is beyond doubt. States' sovereign rights to their natural wealth are universally recognised by the doctrine and practice of international law.

Freedom to explore and use outer space cannot be opposed to the principle of state sovereignty, much less dominate over it. The observance of this provision is especially important when the object of exploration is the territory of a sovereign state rather than outer space.

While formalising the principle of free exploration and use of outer space, the 1967 Space Treaty has confirmed that this activity shall be carried on "in accordance with international law, including the Charter of the United Nations" (Art. III). It follows from this that space activity, including the survey of the Earth's natural resources, cannot be carried on in violation of the principle of state sovereignty, the fundamental principle of contemporary international law.[3]

However, in modern international space law there are as yet no generally recognised special norms regulating the remote sensing of the Earth. Consequently, we are now faced with the task of elaborating a regulation to govern this new type of space activity which would not hinder the development of the promising trend in the ex-

[1] UN Genaral Assembly Resolution 626 (VII).

[2] See also UN General Assembly Resolutions 1314 (XIII), 1958; 2158 (XXI), 1966; 2386 (XXIII), 1968; 2600 (XXIV), 1969; 2692 (XXV), 1970; 3016 (XXVII), 1972; 3171 (XXVIII), 1973; 3281 (XXIX), 1974, etc.

[3] On the correlation between the principle of free exploration and use of outer space and the principle of state sovereignty as it applies to the problem under discussion, see A. Tchernonog, "La télédetection des resources terrestres par satellites", *La Recherche spatiale*, Vol. XII, N 3, 1973, pp. 1-5.

ploration and use of outer space and would prevent the possibility of the information received being used to the detriment of the economic, defence and other lawful rights and interests of states.

We must not lose sight of the fundamental differences between the international treatment of the component elements of the natural environment and of territories subject to survey. It is one thing to explore the World Ocean, atmospheric processes or a state's own territory and it is quite another to survey the territories of foreign states. In the first instance there is no problem of sovereignty, and states are entitled to carry on such research and to dispose freely of the information received (problems that may arise in the process will be chiefly of a national nature). In the second instance, where the territories of other states are subject to survey, their sovereign rights to their territory and natural wealth may be affected.

Ought we therefore to ban the remote sensing of the Earth over the territories of foreign states that have not given their consent?[1] We may indicate a number of obstacles to such a ban. First, it would be difficult to effect it technically, since every flight of a satellite over certain states' territories would necessitate the switching off of equipment on board. Second, it would be practically impossible to verify the implementation of this ban. Third, this ban would create obstacles to, say, observations connected with environmental control and advanced warning about natural calamities in which all states have an interest.

The problem should be solved by regulating the procedure for disseminating and utilising the data of the remote sensing of the Earth (primary data and processed information).

Proceeding from the sovereign rights of states to their own natural resources and from the Space Treaty, international space law should have established the principle that would prohibit the dissemination and utilisation of space data on natural resources to the detriment of the legitimate rights and interests of the states possessing those resources. Responsibility for the observance of this principle by all state bodies and also by juridical and natural persons must devolve upon the respective states and international organisations engaged in space activity.

The establishment of this principle would not restrict the broad study of the natural environment by means of spacecraft and would at the same time serve as a legal guarantee against the use of information received to the detriment of the legitimate rights and interests of states.

The legal aspects of the remote sensing of the Earth from outer space were discussed from May 1974 in the Legal Sub-Committee of the UN Committee on the Peaceful Uses of Outer Space, where this

[1] A similar proposal was made in the draft resolutions submitted by Brazil to the UN (UN Doc. A/AC 105/122, 4 February 1974), and also jointly by Argentina and Brazil (UN Doc. A/C. 1/1047, 15 October 1974).

problem figured on its agenda as a priority item for many years.

The United States, which is actively engaged in the remote sensing of foreign territories, has taken a negative stand on the legal regulation of this activity. For a long time it has not made its own proposals and during the discussion of the drafts submitted by other nations has adhered to the idea that there is no need whatsoever for a legal regulation of this type of space activity and that internationally solutions should be sought only to organisational and technical questions.

In 1975, the USA submitted to the UN its own working paper on the principles of remote sensing. However, this document said nothing about the sovereign rights of states to their natural wealth or about any limitations following from this with regard to the dissemination of the materials of space surveying.

G. C. Reijnen, a lawyer from the Netherlands, notes: "The most striking feature with regard to this subject is the fact that the US *working paper* does not mention sovereignty at all."[1] This approach is not at all accidental. It reflects the US position on matters of legal regulation of the research into the Earth's resources from outer space. By surveying foreign territories from LANDSAT satellites at their own discretion and selling the information received about these territories to any country without restriction, the USA is trying to introduce into international space law a custom according to which it would be possible to dispose of any information about foreign states' natural resources without control.

This purpose is also served by numerous bilateral agreements concluded by the USA with other countries concerning the operation of LANDSAT satellites. It seems that the USA intends to regard these agreements as a precedent for the general legal regulation of the remote sensing of the Earth. In this connection the Swiss jurist Marco Marcoff correctly draws our attention to the fact that the conclusion of numerous bilateral agreements is not a proper guarantee against possible infringements upon the lawful interests of third states.[2]

In the course of discussions in the Legal Sub-Committee of the COPUOS a number of states, including the USSR, Argentina, Austria Brazil and France, tabled their draft agreements and other working papers regarding the legal regulation of remote sensing from outer space. The common elements of these drafts enabled the Legal Subcommittee to tentatively formulate a number of principles regulating the remote sensing of the Earth from outer space.[3] For a long time it

[1] G. C. M. Reijnen, "Remote Sensing by Satellites and Legality". *Legal Implications of Remote Sensing from Outer Space*, Leyden, 1976, p. 27.

[2] M.G. Marcoff, *Traité de Droit international public de l'espace*, Fribourg-Geneva-Paris-New York, 1973, p. 570.

[3] See the Legal Sub-Committee's report on the work of its 22nd session, UN Doc. A/AC. 105/320, Annex I, Add., April 13, 1983.

was not possible to agree on such key questions of legal regulation as the procedure for the circulation of materials of the remote sensing of the Earth (RSE), the procedure of access of sensed states to the RSE materials for their territories, and the responsibility of states for RSE.

The document initially submitted by the USSR contained a provision to the effect that a state which received information through RSE about the natural resources of another state has no right to divulge it or pass it on to third states or organisations without the express consent of the state to which these resources belong, or exploit this information in any other manner to the detriment of the latter.[1]

With due account for the discussion of this problem in UN bodies the Soviet Union made its position more precise and submitted for the consideration of the COPUOS a new document in which it proposed to establish the following principle: "Every State is recognised to have the right to declare that certain types of primary data and analysed information obtained by the remote sensing of the Earth with respect to its territory may be published or given to the third States, natural or juridical persons of third States only with the express consent of the State making such a declaration. The declaration may relate to primary remote-sensing data with a spatial resolution of 50 metres or finer and to analysed remote-sensing information obtained on the basis of such data."[2]

The Soviet proposal is based on the principle that every state has the right to limit or prohibit the circulation of a definite category of remote-sensing data about its territory.

In 1984, at the 23rd session of the Legal Sub-Committee, in an effort to accelerate the unjustifiably protracted elaboration of the RSE principles in UN organs, the Soviet delegation expressed its readiness to support the compromise draft of principles proposed by Brazil in 1982 regarding access to RSE data and international responsibility for the dissemination of RSE data.

The Soviet delegation proposed to include in its text a formulation to the effect that the circulation by one state of any RSE data and information relating to the territories of other states should not inflict damage on the lawful rights and interests of those states and that the infliction of such damage entails international responsibility. Were this formulation agreed on, it would be possible not to insist on the need to stipulate in the text the numerical magnitude of a spatial resolution of 50 metres as a criterion for the regulation of the circulation of RSE data and information.

Brazil's compromise variant supported by the Soviet Union and many other states gave the sensed state the right to have "timely

[1] UN Doc. A/AC. 105/C. 2/L. 88, 18 April 1973.
[2] UN Doc. A/AC. 105/305, 24 February 1982.

and non-discriminatory access" to primary data and processed information obtained by RSE and relating to the territory of a given state "before access is granted to any third party". Brazil proposed to introduce the principle of international responsibility for the spread of any primary data or processed information that is detrimental to the interests of the sensed states.[1]

Under US pressure the Western delegations rejected Brazil's proposal, and in 1984 the French delegation tabled its own working document, in which nothing was said either about the procedure for the dissemination of RSE materials or the responsibility of states for breaking this procedure.[2]

At the 24th session of the Legal Sub-Committee in 1985 a compromise draft of RSE principles was prepared as a result of the exchange of opinions. In 1986, this document was adopted by the COPUOS and then by the UN General Assembly. Principle IV says that RSE "shall not be conducted in a manner detrimental to the legitimate rights and interests of the sensed state". Under principle I, RSE is meant to denote "operation of remote space sensing systems, primary data collection and storage stations, and activities in processing, interpreting and disseminating the processed data".

The draft (principle XII) says that access of a sensed State to primary and processed data and analysed information about its territory must be "non-discriminatory and for a reasonable payment", as soon as those data and information are received.

Principle XIV establishes that states using remote-sensing satellites shall bear international responsibility for their activity and see to it that such activity is carried on in accordance with the present principles and norms of international law, irrespective of whether it is carried on by governmental or non-governmental institutions or within the framework of international organisations of which such states are members." At the same time this principle is subject in the draft to a number of restrictions and references to other provisions of international law, which fact makes it vague and diffuse.

The adoption of the RSE principles by the UN General Assembly has concluded the first stage of the protracted work of regulating this type of space activity. The preparation of a relevant international agreement must become a logical continuation of this work.

2. Direct Television Broadcasting

The use of artificial sputniks for purposes of international com munication over long distances and also the creation of internationa

[1] UN Doc. WG/RS (1982) /W.P. 11, 8 February 1982.
[2] UN Doc. A/AC. 105/C 2/L 144, 16 March 1984.

systems of space communication for direct television broadcasting are the most important and perspective trends in the exploration of outer space and the establishment of the foundations of Star Peace.

Any international system of space communication, above all the system that claims to be universal, must be based on equitable and democratic principles. This provision calls for a strict observance of the fundamental principles of contemporary international law in the process of concluding bilateral, regional and multilateral agreements and of building international communication systems. The direct television broadcasting is no exception to this practice.

Direct television broadcasting (DTB) implies the satellite transmission or re-transmission of radio and TV signals directly to home receiving sets equipped with indoor or block aerials and requisite devices, by-passing ground receiving stations and TV centres.

Under the International Telecommunication Convention, radio transmission through artificial earth satellites implies not only TV broadcasts but also sound and other types of broadcasts through radio waves. The need for the legal regulation of TV broadcasting arises because of television's role in modern life and the particular impact of the visual image, which knows no language barriers. The technical possibilities of DTB are unique, for they can bring video-signals, noted for accessibility and visibility, quick coverage of developments and great emotional impact, to ever broader strata of the population in any point of the globe.

There are two basic methods of receiving and transmitting TV signals via communication satellites. The first method involves the use of large aerials with a diameter of 10 to 25 metres and highly sensitive receiving equipment of TV centres and ground communication lines. The second method is based on the use of powerful satellite transmitters. In this case there is no need for large aerials and complex receiving and transmitting equipment on earth, including TV centres, since signals are transmitted directly to small block aerials (i.e. semi-direct broadcasting) or to individual home TV sets (direct television broadcasting).

Thus, the fundamental difference between the second method and the first lies in the absence of a ground TV centre and the direct reception of signals transmitted via satellites. This makes it technically impossible for a state to control the content of programmes received by its citizens' TV sets. This fact is of special importance and has certain implications in the case of broadcasts from the territories of foreign states.

The use of DTB, a fundamentally new type of space communication, substantially expands the prospects for peace and greater understanding among nations, for their rapprochement and friendship, for a higher cultural and educational level of people and for more rapid socio-economic development, especially for the developing states. For instance, DTB could contribute to the realisation of plans

for economic and social development, including the training of personnel for different branches of the national economy, to a rise in the technical level of industrial production, and to the development of agriculture and public health. The use of DTB to promote peace and progress will undoubtedly benefit human civilisation and expand ties between peoples and countries. In the future it could lead to a single system of "world vision".[1] It has been estimated that three DTB satellites in a geostationary orbit would ensure broadcasts to 90 per cent of the Earth's territory.

However, DTB will be able to play a positive role only when it is used with due consideration for the interests of all countries and on the basis of strict international legal regulation. Otherwise non-sanctioned TV satellite broadcasts to the territory of foreign states could seriously endanger their security, sovereignty, and economic and political independence.

DTB can interfere in states' internal affairs, infringe on their sovereignty, undermine the present structure of world trade through the unlimited advertisement by economically strong states, and also exert a negative influence on other countries' culture, language, philosophical doctrine and religion.

It must be taken into account that a specific feature of this way of making practical use of outer space lies in the fact that the purpose of DTB is to obtain a definite result on earth, a result that can affect the interests of the country engaged in DTB and of other countries as well. Moreover, DTB can be used to the detriment of individual states' security and stable international relations.

Various aspects of DTB were first discussed in the United Nations and some of its specialised agencies concurrently with other questions connected to satellite communication. In 1966, the UN General Assembly authorised the COPUOS to study the possible consequences of space communication. In 1967, it highlighted the problem of DTB and instructed the COPUOS to study this type of communication in a comprehensive way.

The elaboration of principles governing the use by states of satellites for DTB was made a priority item on the agenda of the COPUOS Legal Sub-Committee. Several legal documents were submitted for consideration of the Sub-Committee.

On August 8, 1972, Soviet Foreign Minister Andrei Gromyko wrote to the UN Secretary-General requesting that the 27th session of the General Assembly include in its agenda the issue of a "Preparation of an International Convention on Principles Governing the Use by States of Artificial Earth Satellites for Direct Television Broadcasting". The letter contained a draft convention and stressed the need to make "this new form of space technology serve only the lofty

[1] See Yu. M. Kolosov, G. S. Stashevsky, *The Struggle for a Peaceful Outer Space. Legal Problems*, Moscow, 1984, p. 129 (in Russian).

goals of peace and friendship between peoples. The first requirement is to protect the sovereignty of States from any external interference and to prevent the conversion of direct television broadcasting into a source of international conflicts and of aggravation of the relations between States."[1]

Art. II of the Soviet document said that states parties to this Convention should agree to carry out their television broadcasting via satellites on the basis of the generally recognised principles of international law, the UN Charter and the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies.

The underlying idea of the Soviet draft, as of the Soviet position on DTB in general, is the provision that direct television broadcasting via satellites may be carried out to foreign states "only with the express consent of the latter" (Art. V). The draft envisaged a commitment by states parties to the Convention "to exclude from television programmes transmitted by means of artificial earth satellites any material publicising ideas of war, militarism, nazism, national and racial hatred and enmity between peoples, as well as material which is immoral or instigating in nature or is otherwise aimed at interfering in the domestic affairs or foreign policy of other states" (Art. IV). Art. IV said that "the transmission of advertising and other commercial material may be carried out only on the basis of specific agreements specially concluded between the states concerned".

Under the draft convention, the following types of broadcast shall be regarded as illegal and as incurring the international liability of States: broadcasts carried out without the express consent of states; broadcasts detrimental to the maintenance of international peace and security; broadcasts representing interference in intrastate conflicts of any kind; those encroaching on fundamental human rights, propagandising violence, horrors, pornography and the use of narcotics, undermining the foundations of local civilisation and culture, and misinforming the public (Art. IV). The draft also provided for the right of states to apply suitable measures to counter illegal DTB (Art. IX).

The Soviet draft was supported and approved by many states.

Since 1973, the agenda of the UN General Assembly has invariably included the item: "Preparation of an International Convention on Principles Governing the Use by States of Artificial Earth Satellites for Direct Television Broadcasting". Great interest in the elaboration of the international legal principles of DTB was taken by developing countries, which, on the one hand, particularly need DTB to accelerate national development, and, on the other, have misgivings that they could fall victim to DTB used as a means of interfering in their internal affairs and undermining their national security.

[1] UN Doc. A/8771.

However, some countries, notably the USA, opposed the Soviet initiative, especially on such a vitally important question as a foreign state's prior consent to DTB on its territory.

In March 1974, the USA tabled in the UN its own draft DTB document based on the principle of "a free and open exchange of information and ideas" (Art. 4). According to the draft, this principle should be realised by making transmitting and receiving equipment available to every state. The American document did not contain a clause on a state's prior agreement to broadcasting intended for its population and also did not mention any restrictions with regard to the content of DTB programmes.

The discussion of DTB problems has dragged on for many years, during which a number of drafts have been submitted dealing with the agreement as a whole or its individual clauses. Mutually acceptable solutions and formulations have been found for most of the latter. However, throughout this period attempts to reach general agreement have failed because of US unwillingness to compromise on the question of a receiving state's prior agreement to direct television broadcasts and of the content of those programmes. The efforts of the COPUOS members to advance alternative formulations and find a way out of the impasse have met with a very negative response from the US delegation. As a matter of fact, the discussion of DTB problems has been blocked by the US position.

In supporting the official US line on DTB in the UN bodies and advocating "freedom of information", the American lawyers claim that this principle embodies "the right of free expression" and that "an open market-place of ideas and information is essential to the well-being of the international community"[1] and does not infringe upon the interests of any nation.

Some proponents of the free dissemination of information assert that it is unnecessary to elaborate special rules of international space law regulating relations arising from DTB. For example, the American lawyer J. Gehrig believes that DTB will never be set up because of complex technicalities. From this he draws the conclusion that there is no need to elaborate any special rules regulating this type of activity or at least to speed up the search for a solution. In his opinion, there are quite enough rules in international law to regulate DTB.[2]

In 1977, in an attempt to end the deadlock the delegations from Canada and Sweden submitted a joint compromise document to the COPUOS Legal Sub-Committee. One of its articles, entitled "Consultations and Agreements Between States", provided that a state

[1] F. S. Ruddy, "The Freedom of Information and Direct Broadcast Satellites". *Proceedings of the Sixteenth Colloquium on the Law of Outer Space*, op. cit., pp. 82, 83.

[2] J. Gehrig, "Broadcasting Satellites: Prospects and Problems", *Proceedings of the 27th Colloquium on the Law of Outer Space.*

which is planning or contemplating the setting up of a DTB service specially designed for broadcasts to a foreign state should inform that state without delay about its intention and enter into consultations with that state, if the latter so requests, the purpose of such consultations being agreement with the state to whose territory it is planned to carry out DTB.

The Canadian and Swedish delegations also proposed the adoption of a declaration of principles and not a DTB convention as a legally binding act. The USSR and other socialist countries supported this draft in an attempt to find a way out of the situation. But the USA opposed it and insisted that only consultations should be held between a state carrying out DTB and the receiving state. The US also rejected the clauses of the Canadian-Swedish draft that regulated the content of programmes and introduced criteria to determine illegal and impermissible broadcasts.

In 1981, at a session of the Legal Sub-Committee twelve states (Argentina, Brazil, Canada, Chile, Colombia, India, Indonesia, Iran, Kenya, Mexico, Niger and Venezuela), backed by some other countries, submitted a working paper on DTB whose basic provisions essentially echoed the Canadian-Swedish draft.

However, that document did not suit the USA either. The extremely negative US stance evoked the criticism and displeasure of the bulk of COPUOS members, who succeeded in removing the question of the elaboration of DTB principles from the agenda of the Legal Sub-Committee and placing it before the UN General Assembly, thereby making its fate dependent on whether or not the parties had the real intention to settle this question rather than on a search for legal formulas.

On December 10, 1982, the UN General Assembly adopted a resolution containing 10 principles of the use by states of satellites for international DTB. The results of voting in this document are quite eloquent: 107 states (including the USSR and other socialist countries) voted for, 13 states abstained, and 13 (including the USA, Britain, West Germany, Japan, Italy and Israel) voted against.[1]

According to this resolution, the purposes of DTB are to promote the free flow of information and knowledge in the sphere of culture and science; to contribute to the advance in the sphere of education, social and economic progress, especially of developing countries; to raise the quality of life for all nations and provide recreation with due respect for the political and cultural integrity of states.

The resolution says that DTB activities must be compatible with the sovereign rights of states, including the principle of non-intervention and also the right of every state to seek, receive and disseminate

[1] For more details, see Yu. M. Kolosov and G. S. Stashevsky, *Struggle for Peaceful Outer Space*, pp. 134-143.

information and ideas as relevant UN documents have recorded. These activities must be also compatible with enhancing mutual understanding and friendly relations between all peoples and countries for the good of international peace and security. They must be based on international co-operation, which should be the subject of appropriate agreements. In this process attention must be drawn to the needs of the developing nations, so as to accelerate their national development.

The resolution provides for the peaceful settlement of disputes resulting from DTB through procedures agreed by the parties in accordance with the UN Charter.

Of great importance is the provision stipulating states' responsibility for international DTB, carried out by the states themselves or under their jurisdiction, and for conformity of such activity with the principles of the resolution adopted by the UN General Assembly on December 10, 1982.

The key provision of the document is the duty of states to hold consultations between the broadcasting state and the state that plans to receive DTB, and to conclude agreements or other understandings as a basis for starting DTB. As for technical requirements, such agreements and understandings must conform to the principles outlined in the resolution itself and in documents of the International Telecommunication Union.

In essence, these provisions embody the idea of a state's prior consent to receive DTB intended for its territory, an idea advanced by the Soviet Union in the initial period of the elaboration of the legal principles of DTB.

Thus, the UN General Assembly resolution rejected the principle of unrestricted freedom to disseminate information by fixing the limits to the use of DTB and determining the content of broadcasts. It emphasised that DTB must be carried out in accordance with international law, including the UN Charter, the Space Treaty, the International Telecommunication Convention and the international documents on friendly relations and cooperation between states and on human rights, thereby cutting short the attempts to sanction the idea of a "legal vacuum" with regard to DTB as a completely new and specific mass medium.

The adoption of this resolution is an important stage in the legal regulation of relations arising from the exploration and use of outer space. It clearly shows the fundamental resolve of the majority of states not to allow DTB to be used as a means of ideological subversion and interference in the internal affairs of states.

At the same time, the interests of maintaining universal peace, expanding cooperation and strengthening law and order in outer space set for the world community the task of making legally binding the principles of using satellites for international DTB laid down in the UN General Assembly's resolution.

3. The Boundary Between Airspace and Outer Space

Aeronautics gave rise to the rules and principles of international law regulating the activity of states in the use of airspace. These principles and rules, first laid down in the national laws of individual countries and then in international agreements, define the legal regime of airspace.

The Air Navigation Act signed in Paris in 1919 laid the basis for international airspace law. Art. 1 of the Paris Convention says that every state has complete and exclusive sovereignty over the airspace above its territory. The subsequent development of aviation resulted in the signing in 1944 of the Chicago Convention on International Civil Aviation also based on the principle of states' complete and exclusive sovereignty over their airspace.[1]

The development of the principle of states' sovereignty over their airspace was closely linked with the political, economic, defence and other national interests, which dictated the need for special legal regulation of the use of airspace.

As space activity began at high altitudes, i.e. in outer space, it was considered advisable to introduce a number of international legal rules and principles regulating the exploration and use of outer space for peaceful purposes in view of the global and specific nature of this activity. Various factors, including defence, political and legal ones, were taken into account.

The fact that space technology and outer space itself can be used not only for peaceful, constructive purposes has become especially evident in recent years with the unbridled arms race being shifted to outer space by aggressively-minded US circles.

As Soviet jurists have noted, "the regulation of space activities and of the status of space in international law is necessary because space activities affect the interests of many states even when they do not physically come within the territorial jurisdiction of these states."[2]

From the outset of space exploration the following questions have arisen: what is outer space from a legal point of view? Where does outer space begin? Where do the norms of international airspace law cease to operate? And where do the norms and principles of international outer space law begin to operate? Before the Space Treaty was signed in 1967, the world community applied customary legal norms and principles, e.g. the principles of the freedom and non-appropriation of outer space, the Moon and other celestial bodies. The Space Treaty raised the question of delimiting air and outer space.

[1] For more details, see *International Law*, Ed. by G. I. Tunkin, Progress Publishers, 1986, p. 442.

[2] *International Space Law*, Progress Publishers, Moscow, 1986, pp. 15-16.

Specialists understand by outer space "the space that extends beyond the bounds of the Earth's atmosphere",[1] that is, beyond the bounds of airspace. This general definition cannot be considered satisfactory in terms of international law. In this case the task is not one of determining where airspace physically ends and outer space begins from a scientific standpoint. Moreover, the scientific criteria used to settle this question often change as a result of new data obtained in the course of scientific research.

From the standpoint of law it is important to fix a legal boundary between two spaces where activity is regulated by different principles and norms.

States have been engaged in space activity for more than 25 years. Its various aspects are now regulated by a number of international agreements determining the legal regime of outer space. This regime is based on the principle that outer space is "free for exploration and use by all states without discrimination" and is not subject to "national appropriation" either by proclaiming sovereignty, or by use, or occupation, or by any other means (Arts. I and II of the Space Treaty).

The regime of airspace is based on totally different norms. The present absence of clarity on the question of the sphere of operation of the norms of international space law is fraught with serious consequences for both space activity and air navigation.

Furthermore, space technology is constantly being improved. Today there are objects capable of manoeuvring in both airspace and outer space. In the future, there will no doubt be new, more sophisticated technologies. Should disputes arise, in the absence of a boundary between spaces with different legal statuses, it would be difficult to establish which branch of law ought to be applied to a space object staying for some time in a foreign airspace.

Meanwhile there is still no single approach to the question of where international air law ceases and where space law begins to operate.

International documents that establish the regime of airspace have not determined the upper limit to the spread of a state's sovereignty over its airspace and therefore cannot be used to demarcate two spaces differing from each other from the physical and legal points of view.

The Canadian lawyer A. E. Gotlieb has calculated that jurists have advanced at least 35-40 theories on precisely where outer space begins. However, not one of them has been recognised by either states or lawyers.[2]

[1] *Space Exploration*, Moscow, 1985, p. 194 (in Russian).

[2] A. E. Gotlieb, "Impact of Technology on Contemporary International Law", *Collected Courses of the Hague Academy of International Law*, Vol. 170, The Hague, 1981, p. 225.

The views of governments, international organisations, and jurists regarding the problem under consideration were fairly fully reflected in two reference documents prepared by the UN Secretariat in 1970 and 1977.[1]

As is evident from these documents some jurists proposed as a boundary between airspace and outer space the highest altitude of aircraft flights or the lowest point in the perigee of the Earth satellite's orbit and recommended as a guide the aerodynamic characteristics of aircraft (the so-called von Karman line).[2] Other jurists proposed to divide all *coelum* (above-ground space) into zones. Ideas about creating a single above-ground space and accordingly a single aerospace law were voiced. The supporters of the so-called functional approach denied the need to delimit these two spaces, preferring to regulate outer space activity, irrespective of wherever it is carried out.

Consideration of the Question in the Legal Sub-Committee

In accordance with the UN General Assembly recommendation the question of defining the concept of outer space and delimiting outer space and airspace was included in the 1967 agenda of the Legal Sub-Committee of the UN Committee on Peaceful Uses of Outer Space. From the outset the consideration of this question by the states represented on this body revealed divergencies in their positions regarding the need, advisability, urgency and the very possibility of delimiting outer space. Most participants adhered and continue to adhere to the view that the progress made in space exploration and the need to determine the sphere of operation of a number of international multilateral documents of a universal nature make it necessary to define the concept and effect the delimitation of outer space which has become a new and specific sphere of state activity.

As early as 1966, when the Space Treaty was being drafted, the Mexican representative to the 5th Session of the Legal Sub-Committee noted that there was a need to decide where exactly outer space begins before the conclusion of the discussion on the draft Treaty. He correctly warned that in the absence of exact boundaries of the airspace over which states exercise their sovereignty the situation that had arisen with regard to territorial waters could be repeated.[3]

[1] UN Doc. A/AC, 105/C, 2/7, 7 May 1970; UN Doc. A/AC. 105/C. 2/7 Add. 1, 21 January 1977.

[2] Theodor von Karman proposed to set the boundary of state jurisdiction at an altitude of some 83 km above sea level, where a body moving with a velocity of 7 km per sec. is not subject to aerodynamic force but is subject to centrifugal force. This theory was justly criticised since it did not safeguard the security of low-lying states.

[3] UN Doc. A/AC. 105/C. 2/SR. 71, Add. 1. 21 October 1966.

At the same time some states represented on this Sub-Committee have for many years been upholding the opposite view, which alleges that the absence of a boundary between airspace and outer space in no way hinders space activity, that a dividing line between these spaces could, on the contrary, create additional difficulties. To substantiate their position these states advance the argument that in view of the insufficient experience and of difficulty in appraising how state interests may be affected by different types of space activity, attemps to define the concept of outer space and establish its boundaries should be postponed *sine die* until greater knowledge is acquired and the consequences of space activity are ascertained. In other words, they are for a wait-and-see policy. Among these states we find the USA, Britain, the FRG, and the Netherlands.

In 1983, at the 22nd Session of the Legal Sub-Committee the US representative stated once again that the proposed delimitation did not meet the practical needs of space activity, that the proposed dividing lines between the two spaces had no scientific or technical grounds. As a proponent of the functional approach to the problem of delimitation, with all ensuing consequences, the USA now takes what it terms a pragmatic approach. The question is not one of how to draw a boundary between airspace and outer space, nor of establishing whether it is needed or not; rather, it is one of ascertaining whether the development of space activity calls for such a boundary. Responding to this question in the negative, the US representative claimed that the setting of an upper boundary might create additional difficulties and entail grave consequences for future space activity.[1]

In this context it is pertinent to recall the following remark made by the British jurist Bin Cheng: "It is not believed that government legal officers arguing for the lack of a legal need for delimitation can really do so with conviction, just as it would be unthinkable that any competent lawyer would advise his client that there is no need to have his land and that of his neighbours delimited."[2]

The 23rd Session of the Legal Sub-Committee, held in March-April 1984, in keeping with the General Assembly's resolution 38/80 of December 15, 1983, set up a working group to consider urgently this item on its agenda. The General Assembly specially recommended that the working group take into account the different legal regimes regulating airspace and outer space.

The resolution setting up the working group undoubtedly reflected the anxiety of the UN member states over the fact that the question of the delimitation of airspace and outer space has not yet been solved in a positive way.

[1] UN Doc. A/AC. 105/C. 2/SR, 396, 3 May 1983.

[2] B. Cheng, "The Legal Status of Outer Space and Relevant Issues: Delimitation of Outer Space and Definition of Peaceful Use", *Journal of Space Law*. Vol. 11, No. 1-2, Spring & Fall 1983, p. 95.

However, the USA and its allies continue to hold up the consideration of this item on the Legal Sub-Committee's agenda in an attempt to have a free hand in the further exploration and use of outer space and not to bind themselves with additional obligations.

Relying on the research by their jurists, the Soviet Union and other socialist countries, have repeatedly expounded in the Sub-Committee their position on the delimitation of airspace and outer space, and have advanced numerous arguments to prove that the absence of such a boundary is even now fraught with serious complications. Their position is shared by many states represented on the Sub-Committee.

Of some interest in this connection is the well-argumented working document submitted by Belgium in 1976 for the consideration of the Scientific and Technical Sub-Committee of COPUOS. Drawing upon the latest data, this document substantiated the existence of natural boundaries in the *coelum* and proposed, for practical purposes, a dividing line between airspace and outer space at an altitude of 100 ± 10 km, chosen at will. The document explained that at this altitude there is a so-called turbo-pause, a layer which separates two atmospheric areas with different physical properties, and that the turbo-pause is an atmospheric boundary beyond which air loses its usual basic composition. Thus, the altitude of 100 ± 10 km is an objective indicator both from the standpoint of the mechanics of a space object's flight and from the standpoint of atmospheric physics.

The working group discussed a Soviet document entitled "Approach to the delimitation of airspace and outer space" submitted for the consideration of the Legal Sub-Committee in 1983.[1]

The document proposes that a boundary be established between outer space and airspace by agreement between states at an altitude not exceeding 110 km above sea levels, the boundary to be legally confirmed by the conclusion of a binding international legal instrument. It envisages that the agreed boundary between these spaces will be conditional. At the same time the boundary will in many respects be natural, stemming from a number of objective factors and not ones chosen at random. The document takes into consideration both the specific features of a space object's flight along the near-Earth orbit and the changing physical characteristics of above-ground space as the object moves away from the Earth's surface.

What the Soviet document proposes is the reaching of an agreed decision on the delimitation of airspace and outer space, i.e. establishing a high-altitude limit of state sovereignty, since therein lies the crux of the problem.

The conclusion of an agreement on delimiting the two different spaces would make it possible to clarify a number of questions of

[1] UN Doc. A/AC. 105/C.2/L. 139, 4 April 1983, which replaced UN Doc. A/AC. 105/C.2/L. 121, 2 April 1979.

concern to states and, most importantly, to determine the spatial sphere of operation of the norms and principles of international space law.

That this sphere has not yet been defined is a serious problem in the new, developing branch of international law which hampers both its progress and the pace of space exploration.

The determination of a boundary, though a conventional one at the first stage, will clarify the spatial sphere of operation of the norms and principles of space law and contribute to the creation of favourable conditions for ensuring the security of states, and particularly, the safety of air traffic. Such an approach takes into account the needs of scientific and technological progress and does not hinder the use of new technology.

The second point of the Soviet working document provides for the retention by any state's space object of the right to a harmless (peaceful) flight over the territories of other states at altitudes below the agreed boundary in order to be put in orbit and to return to the Earth.

It is common knowledge that international air law recognises only the authorisation procedure for aircraft flights over foreign territory. Not a single international document speaks about the space object's right to fly across the airspace of another state, which is why it is so important and reasonable for practical purposes to stipulate such a right in a document. This right is of special significance for small states, since the trajectories of a space object's flight and landing, which are subject to special physical regularities, require that the object move along a flat trajectory at the beginning and the end of the flight.

However, this right should not be interpreted broadly. It in no way implies the arbitrary entrance into a foreign state's airspace of space objects capable of in-flight manoeuvring.

Agreement on vital questions connected with the further progress of space activity will no doubt promote broad international cooperation in both airspace and outer space, and will also help to prevent disputes arising from the use of aerospace technology.

Questions of Delimitation in International Law Doctrine

In recent years, the international law doctrine on the delimitation of airspace and outer space has been dominated by the view that it is necessary to set a boundary between them and that such a boundary, based as it is on natural and scientific factors, could be drawn at an altitude of 100 ± 10 km above sea level.

Maureen Williams of Argentina, who favours an early resolution of this question, stressed that legal problems arising from the practi-

cal use of outer space would be increasingly difficult to solve "in the absence of a clear demarcation between both areas".[1] Another lawyer from Argentina, Manuel Augusto Ferrer, holds that to introduce law and order into outer space, it is necessary "to hasten the definition and delimitation of outer space".[2]

Recent years have seen a growing interest in this problem. Vladimir Kopal of Czechoslovakia gives the following reasons for this interest: 1) the number of legislative acts in the sphere of space activity has grown considerably; 2) the number of space objects is on the increase, with the prospect of large orbital space systems being constructed; 3) there is a possibility of creating satellites that will be able to gather solar energy and transmit it to the Earth; 4) equatorial states' claims to individual sections of the geostationary orbit have accentuated the questions of the use of this orbit and of its status. The very principles of the freedom of exploration and use of outer space and of its non-appropriation call for the delimitation of the sphere of operation of space and air law. The legal regimes of airspace and outer space, Kopal concludes, "cannot be correctly interpreted and applied without a precise delimitation of the two legally different spaces".[3]

The majority of representatives of different legal schools share the view that the boundary between these two spaces runs at the lowest perigees of earth artificial satellites, that is, where a space flight can be made. In other words, it is held that a space object that has been put in orbit is located in outer space and does not violate territorial airspace.

Lubos Perek of Czechoslovakia has written about the advantages and economic expediency of this approach: "The criterion of the lowest perigees of earth satellites has the advantage that it is based primarily on physical concepts which are invariable. It depends on technological progress to a very slight degree. In principle it would be possible to construct a special purpose artificial satellite which would survive below 90 km, or at any height for that matter. There would, however, be no gain in any application of such a satellite and its cost would be out of proportion because an extreme mass-to-area ratio can be achieved only by using heavy materials such as lead, gold, uranium or platinum in large quantities."[4]

Special research carried out jointly by the UN Secretariat and

[1] M. Williams, "The Problem of Demarcation is Back in the Limelight", *Proceedings of the 22nd Colloquium on the Law of Outer Space*, New York, 1980, p. 247.

[2] M. A. Ferrer, "The Use of the Geostationary Orbit", *Proceedings of the 20th Colloquium on the Law of Outer Space*, op. cit., p. 218.

[3] V. Kopal, "The Question of Defining Outer Space", *Journal of Space Law*, Vol. 8, No. 2, Fall 1980, p. 161.

[4] L. Perek, "Scientific Criteria for the Delimitation of Outer Space", *Journal of Space Law*, Vol. 5, Nos. 1-2, Spring & Fall 1977, p. 119.

COSPAR notes: "For both circular and elliptic orbits, the drag rapidly increases as perigee height decreases. At perigee heights of 80-100 km the satellite can no longer remain in orbit and begins its final plunge into the lower atmosphere."[1]

The opinion has also been voiced in legal literature that the 1967 Space Treaty indirectly recognises the lowest perigee of a satellite to be the dividing line between airspace and outer space, since it regards objects put in orbit as being in outer space.[2]

A different view is held by some American lawyers. Reflecting the opinion of their government, they propagate the so-called functional approach to the problem of delimitation. They assert that the absence of the concept of outer space and a definition of its boundaries has not interfered with space activity all these years and that international space law has been developing successfully even without a demarcation line between airspace and outer space. That is the line of argument by the American lawyer Frank E. Moss.[3] S. Neil Hosenball and Pierre M. Hartman, also American lawyers, claim that "it has been possible for space activities to take place without resolution of the boundary problem."[4]

The same position is held by the US lawyer George P. Sloup.[5] Moreover, he does not agree with those jurists who believe that a customary rule has evolved in accordance with which a spaceship put in orbit is located in outer space and does not violate territorial airspace.

Customary international law in the sphere of space exploration is just taking shape, says H. Almond of the USA, and therefore it cannot be relied upon "as a source of legal authority".[6]

This point of view is not shared by most authors, including the Soviet jurists, who hold that in the nearly 30 year period an international legal custom has evolved according to which the boundary between airspace and outer space runs at an altitude of the lowest perigees of the Earth's artificial satellites.[7]

[1] UN Doc. A/AC.105/259, 11 January 1980.

[2] UN Doc. A/AC. 105/C 2/7/Add. 1, 21 January 1977.

[3] F. E. Moss, "The Space Shuttle and the Law of Outer Space", *Proceedings of the 19th Colloquium on the Law of Outer Space*, 1977, p. 181.

[4] S. N. Hosenball, P. M. Hartman, "The Dilemmas of Outer Space Law", *American Bar Association Journal*, Vol. 60, March 1974, p. 302.

[5] G. P. Sloup, "The Relationship of Air Law and Space Law–A View From the Space Shuttle, Including Its Internal and External Environments", *Proceedings of the 19th Colloquium on the Law of Outer Space*, 1977, pp. 209-210.

[6] H. H. Almond, "Definition and/or Delimitation of Outer Space", *Proceedings of the 21st Colloquium on the Law of Outer Space*, 1979, p. 77.

[7] See, for example, G. M. Danilenko, "The Boundary between Air Space and Outer Space in Modern International Law", *Sovetskoye gosudarstvo i pravo*, No. 9, 1984, pp. 71-79.

It is common knowledge that the formation of customary international law is conditioned by definite requirements, foremost of which is the requirement that practice must be universal, constant and uniform. The theory of international law includes one more element necessary for the formation of a customary rule, namely, the length of repeated practice. Bearing in mind the rapid pace of development of space exploration, it can be considered that the practice of launching space objects for nearly 30 years now is quite sufficient to meet this criterion as well. During this period various states have launched over 10,000 satellites, spaceships and space stations. The world community is always informed about the launching of space objects. Till now not a single state has protested against such launchings or claimed that they violate the sovereignty of the states over whose territories these space objects fly.

We believe that the long-term practice of launching objects into outer space, including to the altitude of the minimal perigee of the artificial satellite, the absence of any protests and the tacit agreement with such practice testify to the fact that a customary legal rule has already evolved. It would now be advisable to confirm this rule, to concretise it and formalise it in a treaty.

By way of analogy it may be recalled that the principle of a state's sovereignty over its airspace first established itself as a customary legal norm, and only with the adoption of relevant international instruments formalising this principle in a treaty has this norm also become conventional.

The question of the existence of the customary legal norm in this sphere has been widely discussed at conferences of the International Law Association. Many of its members (D. Goedhuis, K. H. Böckstiegel, M. Williams, O. J. Lissitzyn and others) repeatedly spoke in favour of the delimitation of outer space along the lowest perigee of artificial earth satellites, noting that the chief task now was to reach agreement regarding the establishment of an exact height in kilometres. The American lawyer O. J. Lissitzyn said that unilateral statements by a large number of states supporting the delimitation of airspace and outer space at an agreed altitude would be a convincing proof of the existence of a customary norm providing for delimitation at a definite altitude.[1]

The 59th Conference of the International Law Association, held in 1980, said in its resolution: "...the space at and above the altitude of about 100 kilometres above sea level has been growingly acknowledged by States as well as by experts in the field of outer space activities as outer space."[2]

[1] *The International Law Association. Report of the 58th Conference. Manila, 1978*, London, 1980, p. 174.

[2] *The International Law Association. Report of the 59th Conference. Belgrade. 1980*, London, p. 197.

The problem of the delimitation of airspace and outer space has another aspect to it, that of whether the limit of state sovereignty coincides with the high-altitude boundary of outer space. In other words, does a state's sovereign power extend to the altitude at which a dividing line could be drawn between airspace and outer space?

This aspect of the delimitation of airspace and outer space has been discussed in legal literature and touched upon several times by representatives of states on the Legal Sub-Committee, who said that not all states could exercise effective control over their airspace up to an altitude of 100-110 km.[1]

Some representatives used this thesis as an argument in favour of making the boundary dependent on states' technical possibilities.

This point of view coincides with the "theory of effectiveness", which says that exclusive state sovereignty extends to the altitude at which a state can effectively exercise its authority and control. A well-known proponent of this theory, Austrian jurist Alfred Verdross, wrote that "the sphere of the state's exclusive dominance may not extend further than its power. With the development of technology the boundary shifts further."[2]

This theory is disputed by many lawyers who regard it as untenable and even dangerous. As the Soviet lawyer Yu. M. Kolosov wrote, recognition of this theory would make unstable the boundaries of state sovereignty, which would change with technological progress.[3]

Recognition of the principle of effectiveness would institutionalise the inequality of states, for according to this principle the exercise of sovereignty depends on the levels of states' technical achievements, which are known to differ. Were it to be followed, the world community could face a situation in which the countries with greater technical possibilities would control more space over their territories.[4]

Swiss lawyer Marco G. Marcoff has drawn attention to the fact that the approach to delimitation on the basis of effective control contradicts the principle of legal equality recorded in Art. 1.2 of the UN Charter.[5]

The theory of effective control, which is referred to from time to time, patently contradicts the principle of respect for state sovereignty and the principle of equality of states, which are the cardinal principles of international law. States' high-altitude boundary cannot be made dependent on their actual ability to exercise control within airspace over their territories, to say nothing of the fact that the bound-

[1] See, for example, UN Doc. A/AC.105/C.2/SR.411, 5 April 1984.

[2] A. Verdross, *Völkerrecht. 3 Auflage*, Vienna, 1955, p. 199.

[3] Yu. M. Kolosov, *The Struggle for Peaceful Outer Space. A Critique of Bourgeois Theories of Space Law*, Moscow, 1968, p. 76 (in Russian).

[4] N. M. Matte, *Aerospace Law*, London and Toronto, 1969, p. 33.

[5] M. G. Marcoff, *Traité de Droit international public de l'espace*, Fribourg, 1973, p. 318.

ary to which a state's plenary powers extend will change with technological progress. And the states themselves have a vested interest in stability and definitiveness in the matter of the extent of their sovereignty.

An approach which presumes the constant extention of sovereignty upwards and different limits to it for different states cannot help to resolve the question of delimitation. It is hardly possible to reach a solution if one is guided by such an unjust and unsound criterion, one fraught with conflict. We must bear in mind that the 1967 Space Treaty enjoins states to carry on space activity for the benefit of all states, irrespective of their economic development.

4. Use of the Geostationary Orbit

The geostationary orbit[1] (GSO) is the orbit of the artificial earth satellite which runs on the equator plane at an altitude of 36,000 km (35,786.55 km, to be exact) from the Earth's surface. At that altitude the satellite moves with an angular velocity equal to that of the Earth's rotation around its axis, that is, it rotates in synchrony with the Earth. For an observer on the Earth this satellite seems to be geostationary, or hanging motionless over the same spot.

The geostationary satellite's advantage is that a large area of the Earth can be constantly observed from it and the satellite itself can be seen from any point in that area. This makes a stationary ground aerial unnecessary for a continuous satellite tracking. The satellite's motionlessness offers many advantages to various satellite services: there are no interruptions in communication which can be maintained for 24 hours, etc.

Specialists note that "the geostationary orbit, rather than being a line in space, is actually a ring 150 km from north to south and 30 km thick"[2], in which geostationary objects move and are maintained by means of the periodical switching of their vernier engines.

The space object can be maintained in a fixed position vis-à-vis the Earth in such a limited corridor thanks to natural physical conditions requiring only a relatively insignificant expenditure of fuel to correct the object's orbit. This creates unique possibilities for employing space technology.

The placing of space objects in geostationary orbits is of inestimable advantage in such spheres of space activity as communication

[1] The term "geostationary satellite orbit" is more exact, since there are no orbits without satellites. Of late literature has begun to use the term "geostationary space". However, the term "geostationary orbit" is still widely used.

[2] For more details about the characteristics of geostationary orbits, see UN Doc. A/AC.105/203, 1977, and A/Conf. 101/BP/7, 16 January 1981, p. 5 and also A/Conf. 101/BP/7, p. 17.

and direct television broadcasting, meteorology, radio broadcasting, re-transmission of information, the tracking of orbital satellites, etc. In future, these orbits will be used to locate solar power satellites.

A satellite put in a geostationary orbit can be oriented to receive full sunlight 24 hours a day, thanks to which it can transmit the power continuously by microwaves to a surface receiving aerial.[1] And although this idea is nowhere near realisation, its future implementation will be an effective means of obtaining cheap energy in virtually unlimited quantities.

The use of geostationary orbits is very promising in remote sensing of the Earth.

The use of geostationary satellites promises great advantages in meteorology as well. They make possible virtually continuous observations of the Earth's atmosphere, and in that they differ from lower altitude satellites, which provide coverage only once every 12 hours.[2]

The spatial limitation of geostationary orbits gives rise to the question of their saturation with a certain number of satellites. This question is of great importance because in recent years we have seen the rapid growth of the use of geostationary orbits, in particular, for communication satellites. Although experts believe that the danger of collision of satellites put in geostationary orbits, or of their physical damage is insignificant, future scientific and technological progress could make more acute the problem of orbit saturation.

The potential danger of active and passive satellites colliding in the geostationary orbits will perhaps necessitate not only technical measures but also special research and international decision-making. A possible solution could be the removal of satellites from a geostationary orbit upon completion of their useful functioning. The Second UN Conference on the Exploration and Peaceful Uses of Outer Space, held in Vienna in 1982, recommended that the International Telecommunication Union (ITU) should examine the feasibility of incorporating in its future regulations a stipulation that a satellite owner is responsible for removing its satellites from geostationary orbits when they are no longer usable.[3]

The problem of removing satellites that are no longer usable is very complex and requires a special international legal regulation that takes account of factors of a technical, political and legal nature. Moreover, the removal of unusable satellites by means of other manned or automatic apparatuses will be a very costly operation.

[1] UN Doc. A/Conf. 101/BP/7, 16 January 1981, p. 11.

[2] Ibid., p. 10.

[3] *Report of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 9-21 August*, 1982, UN Doc. A/Conf. 101/10, p. 70.

It is important that geostationary satellites should not cause mutual interference, which is why they must be stationed fairly far apart and transmit at definite radio frequency bands. Today the problem of preventing mutual interference is being successfully settled by the International Telecommunication Union. The latter is a UN specialised agency, which has been engaged in planning and regulating the use of geostationary orbits since 1963. It has already adopted the technical and legal rules regulating the use of a frequency spectrum and satellite positions on the geostationary orbits. These rules are to be found in the 1982 International Telecommunication Convention and the 1979 Radio Regulations. The World Administrative Radio Conferences (WARC) deal with some questions of space communication services, including those that make use of geostationary objects.

According to Art. 33.2 of the 1982 Convention, frequencies and GSO are "limited natural resources" which must be used effectively and thriftily. It envisages the need to ensure that countries or groups of countries have equitable access to these resources, taking into account the specific requirements of the developing countries and the geographical position of individual countries.[1]

The documents adopted by the ITU, including the Radio Regulations, which contain detailed provisions on the distribution and use of frequencies and positions on geostationary orbits, aim to make a part of outer space accessible to all states on the basis of international cooperation.

The further development of space technology will help to make better use of the unique properties of geostationary orbits in the fulfillment of diverse tasks. A still wider use of such orbits will probably require the adoption not only of technical, but also of international legal measures.

UN Bodies Examine the Problem of GSO Use.

Representatives of various states in UN bodies and also most lawyers belonging to different legal schools believe that, with all its specific features, all geostationary space is an integral part of outer space to which all basic principles and rules of international space law apply. The fact that the parties have so far failed to agree on a generally acceptable definition of outer space and to determine at what altitude it begins cannot serve as a foundation for claims to the extension of state sovereignty to the segments of geostationary orbits running at an altitude of about 36,000 km above sea level.

[1] International Telecommunication Convention. Final Protocol, Additional Protocols, Optional Additional Protocol, Resolution, Recommendation and Opinions, Nairobi, 1982, Geneva, General Secretariat of the ITU.

Any attempt to turn individual segments of outer space into an object of the exclusive sovereignty of several states is at variance with the major principles of international space law and, in particular, with the principle of non-appropriation of outer space not only by means of proclaiming sovereignty but also by means of its use or occupation (Art. II of the Space Treaty).

This question arose in 1976 when some equatorial states claimed sovereignty over the segments of geostationary space located above their territories.

Claims to the segments of outer space in which geostationary satellites' orbits pass were made by the Colombian representative at the 30th Session of the UN General Assembly in 1975. He asserted that the segment of the orbit located above Colombia was part of its territory rather than part of outer space to which the 1967 Space Treaty extends.[1] He reiterated this position at the next session of the General Assembly. Colombia was supported by Ecuador and Panama at the 30th General Assembly Session. The Ecuadorian representative stated that any definition of outer space should take into account the sovereignty of equatorial states over the segments of the geostationary orbit that corresponded to their national territory.[2]

In 1976, a special conference of equatorial states took place in Bogota (Colombia) to elaborate a common position with respect to geostationary orbits. The conference, attended by representatives of Colombia, Congo, Ecuador, Indonesia, Kenya, Uganda and Zaire, adopted the Bogota Declaration.[3]

The substance of the Bogota Declaration is that the segments of the geostationary orbit above the territories of the equatorial countries are regarded as an integral part of these countries' territories and as "a natural resource" over which they exercise full and exclusive sovereignty; the stationing of any space object in a segment of an equatorial state's geostationary orbit requires previous agreement and express authorisation on the part of the state concerned, and the functioning of this object is governed by its national laws. The segments of the orbit corresponding to the areas of the high seas beyond the national jurisdiction of states must be considered "the common heritage of mankind", in consequence of which the competent international agencies may regulate their use and exploitation in the interests of the world community. The Declaration claimed that the 1967 Space Treaty (Art. II on the prohibition of national appropriation of outer space) is inapplicable since there is no definition of outer space.

The claims by the equatorial states that they have sovereign rights to space situated at such a distance from the Earth contradict

[1] UN Doc. A/C. 1/PV.2052, pp. 43-46.
[2] UN Doc. A/C. 1/31/PV.10, pp. 37-38.
[3] See *Journal of Space Law*, Vol. 6, No. 2, Fall 1978, pp. 193-196.

physical laws. The geostationary orbit does not exist *per se*. In each concrete case the phenomenon of a geostationary satellite is associated with a definite space object: if there is no object, there is no geostationary orbit.

Such claims also contradict the rules of international space law, including its customary norms that have evolved during the three decades of space activity. In the opinion of many authorities, one such customary norm is the one according to which outer space begins at least at the lowest perigee of the orbit of the Earth's artificial satellite, that is, at an altitude of 100-110 km above sea level.

It is indisputable that geostationary orbits at an altitude of some 36,000 km are situated in outer space, which is governed by all principles and rules of international space law and primarily by the principle that outer space is open to exploration and use without any discrimination and on the basis of equality, and by the principle banning the appropriation of outer space by any means whatsoever.

The legal status of GSO has been the subject of lively discussions at the sessions of the COPUOS Legal Sub-Committee. These discussions show that there are some changes in the position of the equatorial states, which no longer insist on their full and exclusive sovereignty over the orbit segments lying above their territories. They now argue in favour of a special legal regime for this unique space. For example, at the Sub-Committee's 22nd session in 1983, the Ecuadorian representative said that it was necessary to set up a working group to begin immediately to elaborate the principles governing "the rational and equitable use of the geostationary orbit". In his opinion, this called for the adoption of rules recognising the special geographical position of some countries, and the concrete requirements of developing countries.[1]

In 1984, at the 23rd Session of the Legal Sub-Committee, a working group was set up to study the definition and delimitation of outer space, and the characteristics of geostationary satellites and their use, including the elaboration of general principles regulating the equitable and rational use of the geostationary orbit. On behalf of Colombia, Ecuador, Indonesia and Kenya, the Colombian delegate submitted to the Sub-Committee their draft of the principles governing the geostationary orbit, which consisted of a preamble and eight clauses.[2]

In his comment on the draft, the Colombian representative advocated "the establishment of a special legal regime for the geostationary orbit". The draft conferred on the equatorial countries "preferential rights" to the GSO segments situated over the territories under their jurisdiction (principle IV) and stipulated the possibility of stationing a space object in the geostationary orbit's segment over the

[1] UN Doc. A/AC.105/C.2/SR.382, 31 March 1983.

[2] UN Doc. A/AC.105/337, 12 Arpil 1984.

territory of an equatorial state with the prior authorisation of the latter (principle V).[1]

The overwhelming majority of states represented on the COPUOS and its Legal Sub-Committee[2], including the USSR and the other socialist community countries, and also the USA, France, the FRG, Japan and Britain, consider the equatorial countries' claims unjustified from both the scientific and legal points of view.

Such claims stem from attempts to partition outer space, which is open to all, and to attain unilateral advantages for a certain group of countries. They have nothing in common with the principle of international cooperation and other fundamental principles of international space law recorded in the 1967 Space Treaty.

The Indian representative at the 23rd Session of the Legal Sub-Committee stated that the equatorial countries did not have sovereignty over the GSO above their territory. The Brazilian representative, who also spoke at the session in connection with the submission by four Latin American countries of draft principles governing the GSO, said that Brazil did not approve of all the provisions of this document and held that the use of the geostationary orbit should be based on precise legal regulations drawn up with due account of the needs and interests of all countries, including the equatorial states.[3]

The Soviet representative participating in the discussion of this question stated that the part of outer space in which geostationary satellite orbits were located was a limited natural resource, that it should be used efficiently and thriftily and become an object of "concrete and precise legal regulation". In defining the legal regime of this orbit, he emphasised, one must proceed from the fact that the stationing by states of geostationary orbit satellites in outer space did not confer any right of ownership on any part of outer space, that all states had equal rights to the use of outer space to station geostationary orbit satellites, and that states should cooperate in the stationing of geostationary satellites within the ITU framework.[4]

As we have noted, the position of the equatorial states was also subjected to well-argumented criticism in legal literature. M. A. Ferrer of Argentina said correctly that the equatorial countries' claims to an area they had never reached or dominated were similar to claims

[1] UN Doc. A/AC.105/C.2/SR. 409, 3 April 1984.

[2] Since 1977 the GSO questions have been included on the agenda of the Legal Sub-Committee dealing with the problem of defining and/or delimiting outer space. Since 1984 this item on the agenda has been entitled: "Matters Relating to the Definition and Delimitation of Outer Space and to the Character and Utilisation of the Geostationary Orbit, Including the Elaboration of General Principles to Govern the Rational and Equitable Use of the Geostationary Orbit, a Limited Natural Resource".

[3] UN Doc. A/AC.105/C.2/SR. 413, 9 April 1984, p. 3.

[4] UN Doc. A/AC. 105/C. 2/SR. 410, 5 April 1984, p. 5.

of sovereignty over the sun, which is also a natural resource.[1]

Maureen Williams, also of Argentina, wrote that the principles of the freedom and non-appropriation of outer space stipulated by the Space Treaty were subject to execution by non-signatory states as well, since they had become the rules of customary international law.[2]

In the opinion of R. Arzinger, a lawyer from the GDR, claims to the geostationary orbit are illegal for two reasons. First, they violate customary international law, namely the principle of the freedom of exploration and use of outer space, which is a universal rule of that law, and second, the 1967 Space Treaty interdicts the appropriation of outer space. Moreover, he adds, those countries which have signed the Space Treaty (Ecuador and Uganda) are directly violating the obligations arising from that Treaty with regard to other states parties to the Treaty. Thus, he concludes, the Bogota Declaration has no legal consequences in terms of international law.[3]

As V. Kopal of Czechoslovakia writes, like all outer space the geostationary orbit is the common heritage of mankind used for the benefit of all states and is not subject to national appropriation. The problem of the geostationary orbit "must be definitely approached in quite another manner than in terms of national appropriation of its parts by individual countries", not in terms of claims to sovereignty, to exclusive use or its "saturation ... by a few nations". This would lead to discrimination with regard to other states which, under Art. I of the 1967 Treaty, are entitled to explore and use outer space. Kopal believes that to ensure equal and effective use of the GSO and observance of the principles of the Space Treaty "some more specific rules regulating the uses of the geostationary satellite orbits could be developed, thus creating a special regime for this important but inseparable part of outer space within the general legal regime thereof".[4]

Japanese lawyer Toshio Kosuge also noted the need to conclude an international agreement regarding the rational use of the geostationary orbit in the future, proceeding from the fact that its use in terms of space activity must be effected in keeping with the principles of the Space Treaty.[5]

[1] M. A. Ferrer, "The Use of Geostationary Orbit", *Proceedings of the 20th Colloquium on the Law of Outer Space*, p. 217.

[2] M. Williams, "The Problem of Demarcation is Back in the Limelight", *Proceedings of the 22nd Colloquium on the Law of Outer Space*, 1980, p. 247.

[3] R. Arzinger, "The Freedom of Outer Space and the Geostationary Orbit", *Proceedings of the 21st Colloquium on the Law of Outer Space*, 1979, pp. 12-13.

[4] V. Kopal, "The Question of Defining Outer Space", *Journal of Space Law*, Vol. 8, No. 2, Fall 1980, p. 169.

[5] T. Kosuge, "National Appropriation of the Geostationary Satellite Orbit", *Proceedings of the 21st Colloquium on the Law of Outer Space*, pp. 31, 33.

American lawyer Edward Finch believes that the equatorial countries' claims are an additional argument in favour of early elaboration of the legal definition of outer space.[1]

The position of the equatorial countries with regard to the geostationary orbit was critically analysed by the American lawyer Jonathan Galloway. Speaking about those countries' demand for a revision of the Space Treaty, Galloway says that at the time it was negotiated the features and advantages of the use of the geostationary orbit were widely known but "no objection was made to its use at that time."[2]

In the view of Soviet jurist Yu. M. Kolosov, "to lay claim to the geostationary orbit, as the Bogota Declaration does, means to lay claim to the trajectory of the movement of a space object belonging to another state."[3]

Taking into account the great importance which the use of GSO has for effective space activity, the Soviet Union submitted to the 20th Session of COPUOS (1977) a working paper in which it expressed its views on the legal status of geostationary orbits. We reproduce it in full.

"1) The geostationary orbit is inseparable from outer space and all relevant provisions of the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies are applicable to it. Under that Treaty, the geostationary orbit, like outer space as a whole, is not subject to national appropriation by any means whatsoever.

"2) The placing of satellites in geostationary orbit by States creates no right of ownership over the respective orbital positions of the satellites or over segments of the orbit.

"3) All States shall enjoy an equal right to the utilisation of a geostationary orbit; the utilisation of a geostationary orbit by States shall not be detrimental to the interests of other States.

"4) States shall cooperate on questions of the placing of communications satellites in a geostationary orbit with due regard to the recommendations and decisions of the International Telecommunication Union concerning the utilisation of the radio-frequency spectrum allocated for the various types of space communications."[4]

In 1979, at the 22nd Session of COPUOS the Soviet Union tabled a new working paper which dealt with two questions jointly: the

[1] E. R. Finch, "The Geostationary Orbit and the 1967 Outer Space Treaty", *Proceedings of the 20th Colloquium on the Law of Outer Space*, p. 220.

[2] J. F. Galloway, "Telecommunications, National Sovereignty and the Geostationary Orbit", *Proceedings of the 20th Colloquium on the Law of Outer Space*, p. 223.

[3] Yu. M. Kolosov, Introduction to F. Nozari's book *Space Law*, Moscow, 1979, p. 34 (in Russian).

[4] UN Doc. A/AC.105/L.94, 20 June 1977.

delimitation of airspace and outer space and the legal status of the part of outer space in which the geostationary satellite orbits pass.[1] There was good reason for that: the Soviet Union stressed that the general regime of outer space also extends to the part in which the geostationary satellite orbits are located.

The 1979 working paper made certain formulations more precise while adhering to the initial premises of the previous document. Thus, it spoke about space in which geostationary satellite orbits pass, which more correctly reflects physical laws. It formulated more clearly the point that "all relevant provisions of the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, are applicable to it, including, *inter alia*, the provision that outer space is not subject to national appropriation by any means whatsoever".[2] The expression "*inter alia*" means that the principle of non-appropriation is not the only principle which underlies the legal regime of geostationary space. Other fundamental principles and rules of space law, including the principle that outer space is open to all states, and also the principle of international cooperation in its use, equally apply to that space. The new document, while making more precise Paragraph 4 of the 1977 paper concerning cooperation in launching communication satellites, says that "States shall cooperate on questions of the placing of geostationary satellites ... with due regard to the recommendations and decisions of ITU".[3] This addition is of importance since the placement of satellites of various designation (remote sensing, meteorology, navigation, etc.) in a geostationary space creates great advantages.

As many representatives on COPUOS and its Legal Sub-Committee recognise, the Soviet working paper, which takes account of the realities and also the interests of all countries, could be a good basis for the further discussion of the legal status of geostationary space.

The Soviet Union and other socialist countries pursue a consistent policy of exploring and using outer space for peaceful purposes, for the good of the present and future generations and on the principle of broad international cooperation, and advocate an international legal regulation of space activity which would guarantee the achievement of these important goals.

Proceeding from physical and technical laws and the unique features of GSO, the socialist countries favour a flexible and multidimensional approach to the solution of this question, an approach which combines improvement of the ITU's technical and legal rules with the possible adoption by the UN of specific international rules regulat-

[1] UN Doc. A/AC.105/L.112, 20 June 1979.
[2] UN Doc. A/AC.105/L.112, 20 June 1979.
[3] Ibid.

ing the legal status of geostationary space. In other words, while the socialist countries believe that all relevant rules and principles of international space law extend to this space, they do not exclude the elaboration of special legal rules in the spirit of the Space Treaty.[1]

A number of states, including Australia, Belgium and France, also subscribe to the view that the regulation of relevant questions within the framework of ITU does not mean that it is no longer expedient to elaborate special legal rules on the basis of the fundamental principles of international space law.

5. Nuclear Power Sources in Outer Space

The employment of nuclear power sources (NPS) in space objects contributes considerably to the effective exploration and use of outer space for peaceful purposes in the interests of mankind.

The use of these new-type power sources has shown that they have a number of advantages as compared with conventional power sources and in some cases they alone are practicable. Thus, in some experiments in remote outer space solar energy cannot satisfy the needs of space objects. NPS are the only means of supplying such objects with electric power. This source is particularly promising for prolonged space flights.

A. D. Terekhov, a Soviet lawyer, has written: "The use of NPS aboard space objects is a natural result of scientific and technological progress and stems from the urgent tasks of the further exploration of outer space. It has been substantiated technically, is rational and economically viable."[2]

The same idea has been voiced by G. C. M. Reijnen of the Netherlands, who wrote that "no rule in space law, and certainly not Art. IV of the Outer Space Treaty, prevents any nation–having the technical capability to do so–to shoot nuclear power (sources) into outer space". In her opinion, the satellites with NPS are not only sanctioned by international law but can be regarded, according to Art. IV of the Space Treaty, "as an equipment or facility necessary for peaceful exploration".[3]

Under the legal regime introduced by international space law,

[1] See the speech by the Soviet representative at the 21st Session of the Legal Sub-Committee. UN Doc. A/AC.105/C.2/SR. 373, 18 February 1982.

[2] A. D. Terekhov, "The Use of Nuclear Power Sources in Outer Space". *Sovetskoye gosudarstvo i pravo*, No. 11, 1983, p. 91. This article describes two types of NPS used in space objects: radio-isotope generators and nuclear reactors. See also A. I. Ioyrysh, *Atomic Power. Legal Problems*, Moscow, 1975, p. 23; G. P. Zhukov, *Space Law*, Moscow, 1966, pp. 163-164 (both in Russian).

[3] G. C. M. Reijnen, "Space Law and the Use of Nuclear Power in Outer Space", *Proceedings of the 21st Colloquium on the Law of Outer Space*, p. 232.

Japanese lawyer Toshio Kosuge argues, there is no difference between satellites equipped with nuclear devices and conventional satellites. Corroborating his view with relevant articles of the 1967 Space Treaty and the 1976 Convention on Registration of Objects Launched into Outer Space, he writes that it is undoubtedly legal to engage in space activity using satellites with NPS. He adds that provisions concerning the definition of a space object (Art. I of the Convention on Registration) and also concerning information about such an object do not single out satellites with NPS on board. Furthermore, the provisions of Art. IX of the Space Treaty dealing with the potential pollution of outer space directly apply to space objects with NPS.[1]

As Eilene Galloway of the USA says, the point is not to ban the use of NPS for satellites, bearing in mind that only this power is required for deep space missions of long duration, but "to devise safety measures to ensure advances in space uses and exploration before, during and after mission flights".[2] It is also important, she adds, to inform people generally that there is no danger in using NPS. She says that the nuclear power used on spaceships is the type of energy that makes it possible to perform certain space missions. "Inasmuch as it is not an explosive device," she continues, "it does not violate this treaty" [the 1963 Moscow Treaty.–*Ed.*]."Problems involved with possible harmful radioactivity are different from weapon tests and explosions."[3]

In 1961, a nuclear power plant was installed in a US navy navigation satellite for the first time. Between 1961 and 1977 the USA launched 23 space craft with nuclear power systems.[4] Since 1977, more streamlined nuclear power plants of greater capacity have been used in all projects where it was not possible to use solar power or other energy sources. These projects include the Voyager and Pioneer satellites.

In 1965, the USSR tested its first radio-isotope generator, Orion I, aboard two space objects–Kosmos-84 and Kosmos-90. In 1970-73, Soviet scientists employed the heating system based on a radio-isotope source in the Lunokhod-I and Lunokhod-II apparatuses. Nuclear power plants were installed to supply energy for facilities on board the Kosmos-954 and Kosmos-1402 satellites launched in 1977 and 1982 respectively.

Since NPS-equipped space objects are engaged in the same space activity whose legal regulation is provided for by rules and principles of international agreements, these rules and principles apply to them, too.

[1] T. Kosuge, op. cit., pp. 225, 226.

[2] E. Galloway, "United Nations Consideration of Nuclear Power for Satellites", *Proceedings of the 22nd Colloquium on the Law of Outer Space*, p. 132.

[3] Ibid., p. 136.

[4] UN Doc. A/AC.105/L.102, 15 March 1978.

The main principle of international space law laid down in the 1967 Space Treaty is the one that outer space is open to exploration and use by all states. This international act, which underlies international space law, does not contain provisions banning the launching of space objects with NPS. The treaty obligation (in Art. IV) "not to place in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner" does not apply to space objects with NPS because the latter pose no danger of nuclear explosions and therefore cannot be regarded as a nuclear weapon.

However, space objects with NPS have characteristics common to all other spacecraft as well as specific ones. We mean the use of nuclear fuel in power plants, which is dangerous and therefore requires special safety measures to prevent accidents.

The launching of space objects with NPS was first discussed in the United Nations in 1978, at the 15th Session of the Scientific and Technical Sub-Committee of COPUOS. Subsequently it was considered both in COPUOS itself and at the UN General Assembly sessions. Special working groups were set up to study numerous proposals. At the request of the UN Secretariat, between 1978 and 1979, some states and international organisations submitted information about the technical aspects of using NPS. Such information was supplied, for instance, by the International Atomic Energy Agency, an intergovernmental organisation whose purpose is to study the legal aspects of atomic danger and to render technical assistance to states.

The discussion of the NPS problems in the Legal Sub-Committee has shown that a number of states represented on it favour the adoption of some special legal provisions (which were absent in the earlier adopted international instruments) concerning this type of energy, taking into account its specific features. The participants in the discussion debated such questions as safety measures in the use of space objects with NPS, limitation of radiation doses, notification about the launching of a space object with NPS, assistance in case of accident, and the problem of responsibility. The Scientific and Technical, and the Legal Sub-Committees of COPUOS paid very serious attention to safety measures during the launching of space objects with NPS.

The item placed on the agenda of the COPUOS Scientific and Technical Sub-Committee in 1978 was entitled "The Use of Nuclear Power Sources in Outer Space". In line with the General Assembly resolution of November 10, 1978 the Sub-Committee set up a working group to deal with the technical aspects and safety measures relating to the use of this type of energy in outer space. During its 17th session in 1979, the working group came to the conclusion that NPS could be used safely in outer space, provided

certain precautions were taken.[1]

Safety problems arise if an NPS-equipped space object crash-lands in which case it can emanate radiation harmful to the population and the environment. As delegates noted, these problems should be resolved on the basis of conclusions formulated by the working group of the Scientific and Technical Sub-Committee.[2]

The recommendations of the International Commission on Radiological Protection (ICRP), in particular its Publication 26, have a direct bearing on this question. From 1979 to 1981, the Scientific and Technical Sub-Committee discussed the application of ICRP recommendations on the use of NPS in outer space.[3] The working group concluded that appropriate radiation protection measures in all phases of an NPS-equipped space object's flight must rely on the accepted standards recommended by ICRP in its Publication 26, which regards a limit of 0.5 rem per year as safe. However, the application of all ICRP recommendations to the use of NPS in space objects is not advisable because of their specific features.

The basis of safety rules for NPS in outer space and in other cases of application of technical achievements must be the scientifically-based and rational methods of averting or reducing as far as possible the negative collateral results of their use.

The task of international law as regards this aspect of the use of NPS in outer space is to elaborate legal rules which would help achieve this goal.[4]

The questions of notification about space activity are settled to some degree by operative international agreements.

Art. XI of the Space Treaty enjoins states "to inform the Secretary-General of the United Nations as well as the public and the international scientific community, to the greatest extent feasible and practicable, of the nature, conduct, locations and results of such activities. On receiving the said information, the UN Secretary-General should be prepared to disseminate it immediately and effectively". Art. IV of the Convention on Registration of Objects Launched into Outer Space, which regulates in detail the notification procedure for space objects, contains a list of the items of information to be

[1] UN Doc. A/AC.105/238, Annex II, 26 February 1979.
[2] UN Doc. A/AC.105/287, Annex II, 13 February 1981.
[3] Ibid.
[4] For more details, see G. I. Tunkin, *International Law*, Progress Publishers, Moscow, 1986, p. 490; S. Gorove, "Cosmos-945: Issues of Law and Policy", *Journal of Space Law*, Vol. 6, No. 2, Fall 1978, pp. 144-145; T. Kosuge, "Nuclear Satellite and Space Law", *Proceedings of the 21st Colloquium on the Law of Outer Space*, 1979, p. 226; P. C. Haanappel, "Some Observations on the Crash of Cosmos 954", *Journal of Space Law*, op. cit., p. 149; G. C. M. Reijnen, "Space Law and the Use of Nuclear Power in Outer Space", *Proceedings of the 21st Colloquium on the Law of Outer Space*, op. cit., p. 234.

forwarded to the Secretary-General. These items give a fairly complete idea about the launched objects, with NPS on board as well; they cover the name of the launching state or states; an appropriate designator of the space object or its registration number; the date and territory or location of launching; basic orbital parameters, including an orbiting period, inclination, apogee, and perigee; the general function of the space object.

This article provides that each state shall notify the UN Secretary-General, to the greatest extent feasible and as soon as practicable, of space objects concerning which it has previously transmitted information, and which have been but no longer are in earth orbit.

In addition, the Space Treaty (Art. IX) contains an important provision on the holding of international consultations whenever necessary if there are grounds to believe an experiment could have potentially harmful consequences.

The rules of international space law regulate the procedure for notifying the UN Secretary-General and the world scientific community about the launching of space objects, including those with NPS on board. It should be noted that the rules of international space law oblige states to submit information about objects already launched into outer space. At the same time the consideration of this aspect of the NPS problems in the two COPUOS Sub-Committees, and those committees' working papers and proposals have shown that delegations from some states[1] favour the necessity to notify the UN about the intended launchings of space objects with NPS on board.

As we have noted, a normally functioning NPS object in no way differs from any other space object. In 1979, the working group of the Scientific and Technical Sub-Committee said in its report: "States should be informed of a possible re-entry or malfunctioning of a spacecraft carrying an NPS so that those concerned might take necessary precautionary measures. The earliest possible notification of such an occurrence is deemed essential."[2] It agreed upon the form of notification about the return of space vehicles with NPS on board. These questions were examined in detail by the Legal Sub-Committee as well, particularly by its working group in 1983. The text agreed upon by the group contains a provision on the timely information of the states concerned about the danger of radioactive materials returning to the Earth, information which must be transmitted in the form adopted by the Scientific and Technical Sub-Committee (a list of transmitted data). This information must also be forwarded to the UN Secretary-General.[3]

It is necessary, first of all, to take into account the scientific

[1] UN Doc. A/AC.105/PV. 234, 8 April 1982.
[2] UN Doc. A/AC.105/238, Annex II, 26 February 1979, p. 3.
[3] UN Doc. A/AC.105/320, 13 April 1983.

and technical advisability of giving notification about the use of NPS on space objects.

Although not a single international space agreement provides for the duty of states to notify other states about the possible return of a space object to the Earth, in practice the states concerned have been thus informed in instances of accidents with space objects and their forced landing (as was the case with the Soyuz-32 and Apollo-13 spaceships). Similar information was also immediately forwarded by the Soviet Union in relation to the accidents on board the NPS-equipped Kosmos-954 and Kosmos-1402 space objects.

In the event of *accidents* the rules of international space law provide for cooperation between states in the finding and rescuing of a space object and for the notification of the authorities that launched the object and also of the UN Secretary-General (Arts. 1, 2, 3 and 5 of the Agreement on the Rescue of Astronauts). Item 4 of Art. 5 of the Agreement deals with the discovery of dangerous or harmful space objects, including NPS objects.

Art. 5 of the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space can also be considered applicable to accidents with NPS-equipped space objects. Item 4 of this Article says that if a contracting party has discovered a space object or its component parts "of a hazardous or deleterious nature", it may notify the launching authority, which must "immediately take effective steps".

The applicability of the provisions of the said international instruments to the cases in which parts of an NPS-equipped space object fall down was discussed in the Legal and the Scientific and Technical Sub-Committees and also in the COPUOS itself. As the Soviet representative at the 25th Session of COPUOS said, the questions of aid to be rendered to a victim state are of a very humanitarian character and of interest to all states that launch space objects and those that do not do so.[1]

Similar questions are dealt with by Art. VI of the Convention on Registration. It says: "Where the application of the provisions of this Convention has not enabled a State Party to identify a space object which has caused damage to it,... or which may be of a hazarduous or deleterious nature, other States Parties, including in particular States possessing space monitoring and tracking facilities, shall respond to the greatest extent feasible to a request by that State Party, or transmitted through the Secretary-General on its behalf, for assistance under equitable and reasonable conditions in the identification of the object."

Art. XXI of the 1972 Convention on International Liability for Damage Caused by Space Objects reads as follows: "If the damage caused by a space object presents a large-scale danger to human life

[1] See UN Doc. A/AC.105. PV.232, 24 March 1982.

or seriously interferes with the living conditions of the population or the functioning of vital centres, the States Parties, and in particular the launching State, shall examine the possibility of rendering appropriate and rapid assistance to the State which has suffered the damage, when it so requests."

The provisions of the said international instruments fully correspond to Art. IX of the Space Treaty, which enjoins states to be guided by the principle of cooperation and mutual assistance in the exploration and use of outer space, and are fully applicable to NPS objects.

There can be no doubt that the question of rendering assistance to a state that has suffered damage must be regarded as very important in the use of NPS space objects.

In 1981, the working group set up by the Legal Sub-Committee discussed the papers submitted by Canada, Italy and Venezuela. Other countries (Brazil, China, the FRG, Nigeria and Sweden) also tabled their proposals at subsequent sessions of the Legal Sub-Committee. The working group concentrated its attention on notification in the event of trouble on NPS-equipped objects fraught with the danger of radioactive materials returning to the Earth, and on aid to states which have suffered damage as a result of the crash landing of such objects.

At the 22nd Session of the Legal Sub-Committee the Soviet representative said that in certain cases a state on whose territory an NPS object or its components land is unable quickly and adequately to eliminate the accident's consequences. Since not all states have a sufficient number of specialists, technical and other means for search operations and for taking other requisite measures, the Soviet delegate emphasised, the launching state must render speedy and effective assistance to it.

Despite lively discussion, the examination of the question of rendering aid to a state that has suffered damage as a result of the entry of an NPS object into the atmosphere following an accident did not bring about any positive results. The working group stated in its report: "...prior to the decision on the necessity of supplementing the existing international law relating to assistance, several questions should be further discussed with a view to the possible working out of mutually acceptable concepts. These questions concerned, *inter alia*, the definition of 'necessary assistance', methods of determining extent and duration of search and clean-up operations, the right of the launching State to participate in those operations, the steps immediately to be taken by the affected State, the payment of costs of search and clean-up operations not conducted by the launching State, the access to the affected State's territory by search groups of assisting States, the extent of local experts' participation, the affected State's right to request assistance from a third State, determining the methods of removing debris from the territory of

the affected State."[1]

The question of *liability* for damage inflicted by NPS objects is among the most important legal questions involved in the launching of such space objects.

Under Art. VI of the Space Treaty, States Parties "shall bear international responsibility for national activities in outer space". In conformity with Art. VII of this Treaty, "each State Party to the Treaty that launches or procures the launching of an object into outer space ... is internationally liable for damage to another State Party to the Treaty or to its natural or juridical persons by such object or its component parts on the Earth, in air or in outer space..." No doubt, both these articles are fully applicable to NPS objects.

Art. VII of the Space Treaty was further developed and concretised in the 1972 Convention on International Liability for Damage Caused by Space Objects. Art. I of this Convention gives a definition of the concept "damage" which could be applied to the damage inflicted by NPS objects. Arts. II and III provide for liability for damage caused on the surface of the Earth or to aircraft in flight, and also for the conditions of liability for damage caused to a space object of one launching state or to persons or property on board such a space object elsewhere other than on the surface of the Earth by a space object of another launching state.

Most lawyers subscribe to the view that the 1972 Convention on International Liability is applicable to the cases of damage inflicted by NPS objects.[2]

In discussing the question of liability in the UN bodies, representatives of some states said that the damage that could be inflicted as a result of the crash landing of an NPS object requires the elaboration of additional norms of liability in connection with its specific features (potential long-term danger, possible incomplete burning down and excessive radiation levels, etc.). In 1981-1983, a number of documents were submitted for the consideration by the working group. They contained new proposals to solve the problem of liability for damage caused as a result of the use of NPS in outer space.

The COPUOS and its Sub-Committees have to undertake the major job of thoroughly considering the foregoing problems and agreeing, wherever necessary and appropriate, on international legal provisions that will regulate the specific aspects of the functioning of space objects equipped with NPS.

[1] UN Doc. A/AC.105/305, Annex II, 24 February 1982.

[2] See, for example, *International Space Law*, Ed. by A. S. Piradov, p. 159 (in Russian), and E. Galloway, op. cit., p. 137. American jurist Stephen Gorove wrote that the 1972 Convention on International Liability for Damage Caused by Space Objects and the 1963 Vienna Convention on Civil Liability for Nuclear Damage cover the cases of damage caused by the fall of a space object or its parts equipped with a nuclear facility or device (S. Gorove, *Studies in Space Law: Its Challenges and Prospects*, Sijthoff-Leyden, 1977, p. 128).

6. Legal Aspects of Safety for Space Crews

On April 12, 1961 Yuri Gagarin made his legendary first flight into outer space. The number of people who have been in outer space since the first cosmonaut's flight is over two hundred. The length of man's stay in outer space has been gradually increasing: he spends long months in orbit and conducts ever more complicated unique studies and experiments. The space technology is improving, mankind's possibilities are widening, and a growing number of nations have astronauts who make space flights.

Man's penetration into outer space, his life and work in this space give rise to a whole complex of intricate legal problems. Up to now there is not a single agreement on outer space dealing specifically with manned space flights. Contemporary international space law contains a number of rules for this sphere of legal regulation, but they are "dispersed" among different agreements and are far from exhaustive.

The problems of safety for space crews hold an important place in the list of the legal problems of manned space flights.

Space activity differs substantially from any other activity. It exerts a definite impact on outer space and the Earth's environment. In view of the ever more sophisticated space technology, the ever increasing range of states applying this technology, and other factors, this impact can pose a real threat to manned space flights.

A person launched into outer space can encounter thousands of unexpected situations. Any step in space involves great risks for the astronauts' life and health. The pollution and contamination of outer space, understood in the broad sense of the word, could endanger manned flights.

With active industrialisation of outer space the level of its pollution can rise sharply. Even now during experiments chemically active matter is released into outer space, which fact may cause unforeseen changes that will deteriorate the environment.[1]

The rise in the number of artificial objects in outer space could imperil the flights of manned space craft. In the assessment of the Second UN Conference on the Exploration and Peaceful Uses of Outer Space, there are several thousand space objects in near-Earth orbits today. For the most part these objects represent "cosmic litter" that includes satellites which are no longer usable and are of no scientific value, spent rocket boosters, waste from manned objects, etc.[2]

[1] *Report of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space*, Vienna 9-21 August 1982, UN Doc. A/Conf. 101/10, p. 72.

[2] Lubos Perek of Czechoslovakia says that "outer space must not be thought of as an infinite dumping ground where anything can be got rid off just by pushing it away. Debris are boomerangs ... if they do come back, they might hit the man or machine which threw them away" (L. Perek, "Traffic Rules for Outer Space", *Proceedings of the 25th Colloquium on the Law of*

The prospect of space pollution is very worrying.

The safety of manned flights in outer space has two aspects—national and international. The internal jurisdiction of the state of registration covers the procedure for preparing the space flight even if nationals of other countries are taking part. All relevant questions are governed by national laws and other legal enactments. When necessary the state of registration may conclude with other states agreements regulating their relations connected with flights in which nationals of other countries participate.

The international aspect of this problem is extremely important in view of the global nature of space activity. It places in the forefront the need to create favourable conditions and maximum safety for the operation of space objects and their crews. International cooperation has a special role to play in this sphere.

Although there is no special treaty or agreement on the safety of manned space flights, all operative international instruments concerning outer space have a certain bearing on it. These are: the 1963 Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water, the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, the 1968 Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, and also the 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies. The 1977 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques also contributes to the safety of space flights. All these instruments are intended to create conditions that facilitate the use of this new sphere of activity for peaceful purposes, for the good of all people.

However, the danger of the unbridled arms race spreading to outer space, a danger which has escalated in recent years because of the intentions of the aggressive imperialist quarters to turn outer space into an arena of military rivalry and confrontation, makes urgent the need to elaborate additional measures to exclude the possibility of the militarisation of outer space, which would turn it not only into a threat to the safety of man's activities in outer space but also into a mortal peril to all humanity.

The safety of manned space flights largely depends on the implementation of the principle of international cooperation and mutual assistance in space activity. It presupposes strict observance of the international legal rules on the safety of space flights and timely

Outer Space, p. 41. I. H. Ph. Diedericks-Verschoor (the Netherlands) is a maximalist on this question and proposes a ban on the discharge of litter by manned space objects (I. H. Ph. Diedericks-Verschoor, "Harm Producing Events Caused by Fragments of Space Objects (Debris)", *Proceedings of the 25th Colloquium on the Law of Outer Space*, p. 3.

and effective aid to spaceships and their crews in distress.

Of great importance here is assistance to spacecrews. The 1967 Space Treaty and the 1968 Agreement on the Rescue of Astronauts chiefly regulate the possible international aid to astronauts in the event of an emergency landing in a foreign territory. In addition, the Space Treaty provides that "the astronauts of one State Party shall render all possible assistance to the astronauts of other States Parties" (Art. V). This provision is of special importance for regulating the problem of safety in the event of accidents in outer space.

But in order to make mutual assistance in outer space practicable, it is necessary to resolve a set of scientific and technical questions, including standardisation of docking mechanisms of different countries, unification of the atmosphere contents, development of standardised individual life-support systems, etc.

The Space Treaty also enjoins all States Parties immediately to inform other States Parties to the Treaty or the UN Secretary-General of "any phenomena they dicover in outer space, including the Moon and other celestial bodies, which could constitute a danger to the life or health of astronauts" (Art. V).

As a supplement to this provision, the 1968 Agreement provides for the duty of all States Parties which receive information or discover that the space crew has met with an accident or is in a state of distress to inform the UN Secretary-General, who must immediately bring this information to the notice of the launching authority and the world public by all possible means at his disposal (Art. 1).

The 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies also regulates safety problems, detailing and supplementing the provisions of the earlier signed instruments. In particular, the Agreement provides for "all practicable measures to safeguard the life and health of persons on the Moon" (Art. 10.1).

Proper safety of manned space flights would be facilitated by the settlement of such questions as the prevention of pollution and contamination of outer space and celestial bodies, the normal functioning of communication with space crews, and the prohibition of interference in the activity of spacecraft of foreign states.

The safety of manned flights could be threatened by radioactive, biological and chemical contamination of outer space, by attendant changes in radioactivity and other phenomena in extra-terrestrial space. The consequences of such contamination could be cumulative. In the opinion of most Soviet jurists, all types of contamination are included in the concept "harmful pollution of outer space '.

Outer space could also be polluted as a result of experiments with potentially harmful consequences. Art. IX of the Space Treaty obliges States Parties to carry on space activity with due account of the interests of all other states in order to avoid harmful pollution of outer space and, if need be, to take appropriate measures.

The meaning of the concept "harmful pollution" is to some extent pinpointed in Art. IX of the Space Treaty, which speaks about "potentially harmful interference" in the space activity of other states. In other words, "harmful pollution of outer space" implies activity that inflicts damage on the activity of other states.

Under Art. IX, if there are grounds to believe that an experiment could create "potentially harmful interference", the state that is planning such an experiment "shall undertake appropriate international consultations before proceeding with any such activity or experiment". At the same time any other state not participating in such activity or experiment fraught with potentially harmful consequences may request the holding of consultations concerning such activity or experiment.

We think that it would be advisable to develop and concretise the Space Treaty provisions regarding international consultations in view of the special importance of creating safe conditions for man's flights in outer space.

The normal and stable functioning of radio communication is of special value for manned flights. In cases of distress or any other emergency situation the significance of communications with the Earth and also between space crews increases.

British jurist Wilfred Jenks figuratively called space communication the "nervous system of all activity in outer space". He wrote that only with its aid is it possible to control and track space objects and receive scientific and other information from them, maintain contact with astronauts, and transmit radio signals.[1]

Under Art. 25 of the 1982 International Telecommunication Convention, "the international services of telecommunications must give absolute priority to all telecommunication reports about the safety of human life at sea, on earth, in the air and in outer space".

Non-sanctioned interference with the activity of space objects of foreign states—the removal of a space object from its orbit with its subsequent return to the Earth, its being put out of action or its destruction—is totally impermissible.

The further development of space exploration could raise the question of creating special safety zones in outer space or on celestial bodies. We can visualise a situation in which, for any reason, a spaceship crew will have to stay in such a zone for some time (for example, if there is sudden danger or in expectation of another spaceship's arrival from the Earth), without interfering with the movement of other space objects. It may be necessary to allot additional area for the safety of a space object and its crew in emergency situations or in especially dangerous experiments. This measure may also be required in order to stack materials prepared for return to the Earth. Such zones will be of special importance when space stations begin

[1] W. Jenks, "International Law of Outer Space", SC/I/DE/63/2, Annex IX.

to function actively on the Moon. The legal status of such zones must be precisely defined by a special international agreement.

In future, when movements in outer space will reminiscent of the heavy traffic of transport vehicles on the Earth, at sea or in the air, we shall have to adopt certain traffic rules for space routes in order to ensure maximum safety and efficiency of space flights. Various views have been advanced on this score in legal literature.[1]

Both Soviet and foreign jurists have made proposals to create an international rescue service, an international body to regulate questions of safety for space flights or an international space agency vested with coordinating and operative functions.

This body could be of vast importance for carrying out operations in outer space to assist and rescue astronauts in the event of accidents or any other emergency situations. Special space objects could, when necessary (the illness of an astronaut, equipment failures, etc.), quickly approach a space object in distress, dock with it and render needed assistance.

However, the creation of such a service or organisation requires the settlement of a number of political, legal, economic, scientific and technical questions.

As space activity increases, in particular man's participation in the exploration and use of outer space, as space flights grow in number and complexity, and as large structures and settlements in outer space are built, the question of further elaborating strict national and international legal norms to regulate the life and work of astronauts in outer space will acquire ever more practical value and meaning. We are already seeing more clearly the need to conclude an international agreement dealing specifically with the regulation of relations arising in connection with man's flights in outer space.

[1] See, for example, L. Perek, "Traffic Rules for Outer Space", *Proceedings of the 25th Colloquium on the Law of Outer Space*, p. 37.

Chapter 3

INTERNATIONAL COOPERATION IN THE EXPLORATION AND USE OF OUTER SPACE

1. Legal Basis of Cooperation

International cooperation in the exploration and use of outer space may be described as joint scientific, technical, economic, political and legal activities of states to ensure the use of the achievements of space science and technology for peaceful purposes and for the benefit of all countries and peoples.

The exploration of outer space began under the aegis of international cooperation. It is highly symbolic that the Soviet Union launched the first artificial earth satellite during and within the framework of International Geophysical Year, an important event in the history of cooperation, and one in which 67 countries took part.

Today many countries launch various space objects and vehicles, conduct space research and organise international manned flights. Naturally, national space programmes are supplemented by broad joint research. At present dozens of countries participate to varying extents in international cooperation in the exploration and use of outer space.

International cooperation in this field is an objective necessity because of several economic, political, social, scientific and technical reasons. It is an important factor in the successful and fruitful development of space exploration. It is closely associated with the elaboration of international agreements regulating relations that arise in the exploration and use of outer space.

At the dawn of the space age, the Soviet Union initiated the conclusion of international treaties and the development of broad cooperation in the exploration and use of outer space, and has been following this course for the past three decades.

The main space agreements were drafted and signed on the Soviet Union's initiative and with its constructive contribution, including the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies.

The Soviet Union regards international cooperation based on full equality, mutual benefit, non-discrimination, and non-interference in internal affairs as one of the basic directions of the peace struggle

today. Its persistent efforts for peace in outer space is a logical continuation of the struggle for world peace.

The scale of international cooperation in the exploration and use of outer space is directly dependent on the relations between states, the degree of their mutual understanding and their desire to expand international contacts. An improvement in international relations and detente are essential prerequisites for the development of cooperation in outer space. On the other hand, military psychosis, the destabilisation of international relations, a bid to militarise outer space do serious harm to cooperation in the exploration and use of outer space.

At the same time, joint efforts in the exploration and use of outer space exert a reciprocal influence on international relations. Cooperation in space could contribute to a rapprochement and mutual understanding between nations, and become an important factor in the consolidation of humanity. In 1972, Soviet consmonaut Vitaly Sevastyanov, and Alexander Ursul, a specialist in the philosophical problems of space exploration, wrote: "More than any other achievement of the scientific and technical revolution, the exploration and use of outer space help one to understand the tasks of humanity as a single whole that has general, global duties with respect to the sphere of the interaction between society and nature."[1]

The legal regulation of international relations arising from the exploration and use of outer space helps to provide a firm legal basis for international space cooperation. The legal foundation of such cooperation for peaceful purposes includes:

–basic principles and rules of international law, including the principles of the UN Charter;

–basic principles of international space law;

–special norms of international space law regulating the specific questions of states' international cooperation in the exploration and use of outer space.

The basic principles of international law are universal and form the basis for the legal regulation of relations between states. They are applicable to all types of activity by the subjects of international law in the sphere of international relations.

However, the general principles of international law are not enough to govern the exploration and use of outer space, since these principles do not take account of the specific features of space activity and, naturally, cannot cover all concrete problems arising in this process. These purposes are served by the principles and norms of international space law, which, based as they are on the general principles of international law, represent one of its branches.

The basic principles of international space law must be observed

[1] V. I. Sevastyanov, A. D. Ursul, *The Space Era: Society and Nature*, Moscow, 1972, p. 11 (in Russian).

in any activity connected with the exploration and use of outer space. Because they are specific in relation to the universal principles and norms of international law, these principles at the same time fulfil the role of the main principles of the given branch of law and are a criterion of the lawfulness of any space activity.

The special norms of international space law that follow from its basic principles regulate concrete questions pertaining to international cooperation in the exploration and use of outer space. They are embodied in both the universal agreements drafted within the UN framework and in regional or bilateral agreements.

Paying constant attention to the strengthening of the legal principles of international cooperation in the exploration and use of outer space, the Soviet Union has made a number of proposals to expand this cooperation and improve its legal basis. In this connection, mention should be made of the Soviet initiative to include on the agenda of the 40th session of the UN General Assembly the item on "International cooperation in the peaceful exploration and use of outer space in the context of its non-militarisation". In accordance with the UN procedure, the USSR forwarded to the Secretary-General a document entitled "Basic trends and principles of international cooperation in the peaceful uses of outer space in the conditions of its non-militarisation (Soviet proposals)" and also a draft General Assembly resolution on this question.[1]

The new Soviet initiative is of special significance in these uneasy and critical times when humanity is faced with the choice of outer space either yielding ever more substantial results to improve the living standards of our planet's inhabitants or becoming a fresh source of mortal danger. The Soviet Union states firmly that the only reasonable choice is one in favour of the non-militarisation of outer space, and advances a broad positive programme of peaceful space activity.

The 1985 Soviet proposals reveal the essence of the non-militarisation of outer space, by which is meant the states' refraining from developing (including scientific research), testing and deploying space strike arms. They highlight the connection between the non-militarisation of outer space and the prospects for international cooperation in its exploration and use. Agreement on effective measures to prevent an arms race in outer space opens up broad vistas for international cooperation in the exploration and use of space for peaceful purposes.

The Soviet Union proposes a complex of concrete measures that would promote the pooling of states' efforts in the peaceful exploration of outer space and in the use of space technology for the benefit of all nations.

In the USSR's view, international cooperation in the peaceful uses of outer space could be developed in the following directions:

–basic scientific research into outer space and celestial bodies

[1] *Pravda*, August 17, 1985.

and the launching of interplanetary spaceships for these purposes;

–application of the results of space research, and the use of space technology in biology, medicine, the science of materials, weather service, the study of climate and natural environment, global communication systems, and remote sensing of the Earth to obtain data for geology, agriculture, the exploration of the World Ocean, and also assistance in the search and rescue of people in distress at sea or in the air;

–development and use of space technology, including large international orbital stations and manned ships of different types.

The Soviet proposals contain a list of the principles underlying the peaceful exploration and use of outer space. In the first place, they imply undeviating observance of the operative treaties aimed at preventing an arms race in outer space and also of such general principles of the UN Charter as prohibition of the threat or use of force, peaceful settlement of disputes, equality, respect for sovereignty, non-intervention in states' internal affairs, cooperation in good faith, mutual assistance, and due account of the interests of other states.

The 1985 Soviet proposals pay much attention to improving the mechanism of cooperation between states in the exploration and use of outer space (for more details, see § 7 of this Chapter).

2. Legal Content of the Principle of Cooperation in International Space Law

The special role played by international cooperation in space research and its practical applications necessitates a clear-cut elucidation of the legal content of the principle of interstate cooperation, which is one of the basic principles of international space law. There are diametrically opposite views in legal literature on this question: from the proclamation of cooperation in space as an unconditional duty of all states to the complete negation of the legal force of this principle.

The principle of states' cooperation in space is not a new principle of international law or a principle of international space law alone. It formalises and develops international cooperation as it applies to the sphere of the legal regulation of the international relations that arise in connection with the exploration and use of outer space.

The UN Charter has proclaimed international cooperation in the settlement of international problems to be one of the basic purposes of the United Nations (Art. 1.3). The principle of states' cooperation has subsequently become one of the seven basic principles of international law unanimously confirmed by all UN members in the Declaration on Principles of International Law Concerning Friendly Relations

and Cooperation Among States in Accordance with the Charter of the United Nations.[1] According to this Declaration, states' cooperation with one another in various spheres of international relations, irrespective of the differences in their political, economic and social systems, is their duty under international law.

The Declaration proclaims cooperation a duty only if it accords with the UN Charter, i.e. if it conforms to the other universally recognised principles of international law. This is reflected in the very formulation of the principle: "the duty of States to cooperate with one another in accordance with the Charter". The Declaration places special stress on its obligatory nature in light of the need to maintain international peace and security. It also says that cooperation must be in keeping with the principles of sovereign equality and non-interference. This principle is treated similarly in the Final Act of the Helsinki Conference on Security and Cooperation in Europe, where it was further developed.

The principle of states' cooperation in the exploration and use of outer space for peaceful purposes is one facet of the principle of cooperation proclaimed by international law, confirmed and developed by international space law.

The special significance which the world community attaches to the pooling of efforts by states in the exploration and use of space is reflected in the fact that the principle of international cooperation in outer space is recorded in the Space Treaty along with other basic principles of international space law. Thus, the Preamble to the Treaty speaks about the desire of states to promote broad international cooperation in relation to both the scientific and legal aspects of the exploration and use of outer space for peaceful purposes. Art. I says that states shall encourage international cooperation in scientific research; Art. III mentions the expansion of international cooperation and mutual understanding; Art. IX enjoins States Parties to the Treaty to be guided by the principle of cooperation and mutual assistance.

Other provisions of the Space Treaty follow from and add detail to the principle of cooperation. Chief among them is the duty of States to take account of the interests of all other States in their space activity (Art. IX); not to cause potentially harmful interference in other States' activity (Ibid.); to render all possible assistance to astronauts of other States (Art. V); to consider, on an equal basis, the requests of other States that they be given the opportunity to watch the flights of space objects (Art. X); and to inform all other States about the character, course, place and results of their space activity (Art. XI).

As in other spheres of international relations, the principle of cooperation in space law must be treated above all as the duty of

[1] Resolution 2625 (XXV), 24 October 1970.

states to cooperate with one another in maintaining international peace and security in outer space. It also presupposes the duty of states to promote the development of broad contacts and the joint exploration and use of outer space for peaceful purposes.

As for concrete rights and duties in the sphere of scientific and technical cooperation in space, they can follow only from treaties concluded for this purpose by states and intergovernmental organisations. Proceeding from their needs, interests and possibilities, states specify the character and degree of their participation in international space projects and programmes by means of mutual agreements and understandings recorded in treaties. The latter concretise and give real content to the principle of cooperation.

3. Realisation of the Principle of Cooperation by the USSR

The Soviet Constitution says: "The USSR's relations with other States shall be based on ... cooperation among States and fulfilment in good faith of obligations arising from the generally recognised principles and rules of international law, and from the international treaties signed by the USSR" (Art. 29). According to the Constitution, one of the chief tasks of the Soviet state is to promote international coopration. Thus, for the USSR the duty of promoting international cooperation (including in space activity), regardless of differences in states' political, economic and social systems, is not only an international legal principle but a basic constitutional one as well.

The USSR has been firmly committed to developing mutually advantageous cooperation with other states in the exploration of outer space since the very beginning of the space era. Today it carries out its programmes of international cooperation in space exploration with a large number of states belonging to different social systems. The forms and methods of this cooperation vary: from joint flights of Soviet and foreign cosmonauts in Soviet spaceships and stations and the launching of foreign spacecraft by Soviet boosters to optical observations of artificial earth satellites from joint stations set up in different parts of the globe. Many states are involved to varying extents in space cooperation with the Soviet Union, and an even greater number participate in this cooperation within the framework of various intergovernmental and non-governmental space organisations.

a) Multilateral Cooperation of Socialist States in the Intercosmos Programme

Socialist states began their space cooperation with the launching of the first artificial earth satellite.

Until 1976 this cooperation in the Intercosmos Programme was based on several documents: letters signed by heads of government of the states concerned formalising the agreement to expand and develop space cooperation; interdepartmental agreements reached at the conferences held by socialist countries on the exploration and use of outer space in 1965 and 1967 and approved by the governments of the states concerned; a statute on mixed working groups adopted by national coordinating agencies.

Taking into consideration the development of socialist economic integration and the importance of space exploration by socialist countries, Bulgaria, Cuba, Czechoslovakia, Hungary, the GDR, Mongolia, Poland, Romania and the USSR signed an Agreement on Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes on July 13, 1976. This Agreement came into force on March 25, 1977[1] and the Socialist Republic of Vietnam became a signatory to it on May 17, 1979.

Under Art. 2 of the Agreement, these states focus on the following areas of the exploration and use of outer space: study of the physical properties of outer space; space meteorology; space biology and medicine, space communications, and study of the natural environment by means of space craft.[2] These areas of research have become traditional for the socialist states.

Cooperation between the interested organisations of the Contracting Parties is carried on on the basis of agreed programmes and plans which define the conditions for the conduct of specific space experiments and investigations. "Depending on their interest, organisations of all the Contracting Parties or of some of them may participate in the said programmes and plans" (Art. 6).[3]

As a rule, the states do not make mutual payments and settlements and have not set up a common monetary fund for joint research. Rockets and equipment for a command and measuring complex are provided by the Soviet Union free of charge. Each country finances the work of its scientific and industrial organisations.

In order to conduct joint investigations and experiments the countries participating in the Intercosmos Programme make use of an original cooperation mechanism consisting of the national coordinating bodies, standing working groups, and conferences of the formers' heads. The national coordinating agencies, set up in all the countries concerned under the academies of sciences or corresponding ministries, co-ordinate the implementation of the 1976 Agreement.

The planned experiments and investigations are carried out by

[1] *Manual on Space Law*, Vol. II, Oceana Publications, New York, 1979, pp. 253-258.

[2] Ibid., p. 254.

[3] Ibid., p. 255.

standing joint working groups organised in accordance with the five basic areas of cooperation recorded in Art. 2 of the Agreement. These groups fulfil the agreed programmes and plans of joint research, work out the prospects of cooperation, secure a high level of scientific organisation of cooperation, and promote its efficiency (Art. 2 of the 1981 Statute of Joint Working Groups).

The working groups meet in conference at least once a year, each member-country having one vote. The working groups seek to have their decisions and recommendations adopted by all the countries concerned. Where this is not achieved, they have legal force for the countries which favoured their adoption.

Decisions and recommendations on scientific and technical, and scientific and methodological matters come into force as soon as they are adopted. Each country has two months to reject these decisions and recommendations. Recommendations on organisational and financial matters are adopted by the Conferences of the heads of the national bodies.

Conferences of the heads of the national coordinating bodies, held at least once a year, take decisions and make recommendations to develop and specify the joint programmes. They adopt the decisions and recommendations by a majority vote, with each country having one vote. The Conference decisions and recommendations are not binding on the countries which have opposed them.

Since Intercosmos does not have features of an intergovernmental organisation such as a special constituent instrument, an international secretariat or a common budget, it cannot be regarded from the standpoint of international law as an international intergovernmental organisation in the strict sense of the word.

The Intercosmos programme is an open and democratic form of cooperation under which every state makes its own contribution and enjoys the results of common effort. Moreover, it is one of the most successful ventures in cooperation in the world today.

Major scientific and technical results have been achieved under the Intercosmos Programme: discoveries of a fundamental nature have been made and unique methods and devices have been developed. The scientific and industrial teams of the member-countries have jointly devised and produced scientific equipment for more than 20 satellites of the Intercosmos series and for scores of geophysical and meteorological rockets. They continue to construct new instruments to be used on artificial earth satellites, interplanetary probes, orbital scientific stations and other spacecraft.

Flights of citizens from socialist countries in Soviet spaceships and stations are an important stage in the Intercosmos Programme. During these flights spacemen have performed scientific and technical experiments, equipment for which has been developed and manufactured in the member-countries. In 1978-81, Soviet cosmonauts made their space flights together with citizens of Bulgaria, Czechoslo-

vakia, Cuba, the GDR, Hungary, Mongolia, Poland, Romania and Vietnam.

b) Cooperation on the Basis of Bilateral Agreements.

The Soviet Union and India. The legal basis of Soviet-Indian cooperation in outer space is formed by the Intergovernmental Agreement on Further Economic and Trade Cooperation between the USSR and the Republic of India of November 29, 1973, and also a number of interdepartmental agreements signed before and after the aforementioned Agreement.

The Agreement of November 29, 1973, concluded for a 15-year period, contains the mutual obligation of the parties to develop and strengthen scientific and technical cooperation, including in the exploration and use of outer space, and also to contribute in every way to cooperation between interested Soviet and Indian organisations. Under the Agreement, cooperation between the two countries is based on respect for sovereignty, territorial integrity, non-intervention in each other's internal affairs, equality and mutual benefit (Art. 1).

To implement specific projects, agreements are concluded between the organisations directly responsible for their realisation. on the Soviet side, the USSR Academy of Sciences and other agencies, and on the Indian side, the Indian Space Research Organisation. In 1972, 1976 and 1979, three agreements were signed to provide for the launching of Indian-made satellites from Soviet territory with the help of Soviet boosters. Under these agreements, technical questions involved are tackled by joint working groups headed by project managers of both sides.

The agreements do not provide for monetary exchange. Their principal aim is Soviet assistance to India in the establishment and development of its own space science and technology, an aim which was also served by the agreements signed earlier (in 1964 and 1970) between the USSR Chief Administration of the Hydrometeorological Service and the Department of Atomic Energy of the Indian Government on Soviet assistance in the building on Indian territory of an international rocket range for atmospheric sounding. In accordance with UN General Assembly resolution 2130 (XX) of December 21, 1965, the rocket range Thumba was placed under the UN aegis.

The first Indian artificial satellite—Aryabhatta—was launched from Soviet territory on April 19, 1975. The Soviet side provided a booster to launch the satellite and produced a number of systems for it, participated in mission control, and advised the Indian specialists at all stages of its development and preparation for launching. All operations, including technology transfer, were made by the Soviet side gratis.

The procedure was the same for the launching of the second

Indian satellite, Bhaskara, for scientific purposes, which included remote sensing of the Earth from outer space. The satellite was launched from Soviet territory on June 7, 1979. Another Indian satellite designed to study the Earth's surface from outer space was placed in orbit with the help of a Soviet launch vehicle in 1981.

Since 1970 the international rocket range, Thumba, has been regularly launching Soviet meteorological rockets with Soviet and Indian scientific equipment. The results of joint experiments are used by both countries' meteorological centres and are also transmitted to the world centres of geophysical information for broader use.

In 1977, the Soviet Union and India built a station on Indian territory to track artificial earth satellites. Scientific equipment was supplied by the Soviet Union and other member-countries of the Intercosmos Programme. Observation results obtained by the station were made available to the world scientific community. Between 1977 and 1979, Soviet and Indian scientists carried out extra-atmospheric experiments with the aid of instruments installed in high-altitude balloons.

The logical continuation of these efforts was the successful space flight of two Soviet cosmonauts and an Indian cosmonaut in April 1984. They carried out a series of scientific investigations and experiments aboard the Soviet spaceship and station.

The Soviet Union and France. France is the first developed capitalist country with which the Soviet Union has concluded an intergovernmental agreement on cooperation in the exploration of outer space for peaceful purposes. This agreement, signed by the foreign ministers of both countries on June 30, 1966, provides for the preparation and implementation of a programme of bilateral cooperation in outer space and for support and assistance to the national organisations concerned.[1]

The Preamble to the 1966 Agreement says that the cooperation between the USSR and France accords with the spirit of the traditional friendship between the Soviet and French peoples and will contribute to the further expansion of cooperation between the European countries in sciences and technology. The Agreement defines the main areas of cooperation: the exploration of outer space, space meteorology, space communications, exchange of scientific information and scientific delegations, organisation of conferences and symposiums.[2] Both parties agreed to extend their cooperation to other fields, e.g. space biology and medicine.

The Intercosmos Council under the USSR Academy of Sciences and the National Centre of Space Research of France (CNES) are charged with the practical implementation of the Agreement. They have set up joint working groups for each area of cooperation. Their

[1] See *Yearbook of Air and Space Law. 1966*, Montreal, 1968, pp. 543-544.
[2] Ibid., p. 544.

annual sessions are convened in turn in the USSR and France. Concrete programmes of joint work, mutual obligations of the parties, the schedules and methods of their realisation are recorded in working minutes. When necessary, the general agreement is supplemented with special interdepartmental agreements.

Soviet and French scientists have carried out several dozen joint experiments in outer space whose results are reflected in numerous collective scientific publications. French and Soviet-French instruments have been installed on Soviet satellites of the Kosmos, Oreol, Prognos and Astron types, in the Mars and Venus interplanetary stations, on lunar spacecraft, and on orbital manned stations.

Three French scientific and technological satellites have been placed in orbit with the help of Soviet boosters. Numerous rockets have been launched in different parts of the globe to conduct joint experiments in space meteorology. Scientific investigations are determined by the mutual interests of both parties and are carried out both with the help of Soviet spacecraft and French geophysical rockets and high-altitude balloons. In 1982, a Soviet-French crew made a space flight on the Soviet space complex Salyut-Soyuz. Joint Soviet-French research covers practically all areas of modern space science.

The Soviet Union and the USA. The first joint Soviet-American research in outer space was conducted on the basis of an agreement signed by the USSR Academy of Sciences and the US National Aeronautics and Space Administration (NASA) on June 8, 1962. Soviet-American cooperation in outer space received a fresh impetus in 1970 and 1971, when scientists and technical specialists of both countries met on several occasions to discuss the possibility of developing compatible systems for the rendezvous and docking of spaceships and stations, and of extending their cooperation in space research.

On May 24, 1972 the USSR and the USA signed an Agreement Concerning Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes which provided for the extension of cooperation in three directions:

–coordination in space research, mutual exchanges of scientific information and delegations, joint experiments in the fields of space meteorology, study of the natural environment from outer space, exploration of near-earth space, the Moon and the planets, space biology and medicine;

–development of compatible systems of rendezvous and docking Soviet and American spaceships and space stations, including the joint test flight of a Soviet Soyuz-type spacecraft and a United States Apollo-type spacecraft in order to test such systems;

–encouragement of international efforts towards the solution of international legal problems of the exploration and use of outer space for peaceful purposes in the name of strengthening law and order in outer space and of further developing international space law.

The central place in Soviet-American cooperation in outer space in the first half of the 1970s was taken by the development of compatible systems of rendezvous and docking Soviet and American spaceships and space stations, which culminated in the successful joint Soyuz-Apollo flight in July 1975.

On May 18, 1977, the USSR and the USA concluded a new Agreement Concerning Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes in connection with the expiry of the previous Agreement. The development of search and rescue satellite systems was added to the areas of cooperation envisaged by the 1972 Agreement. The parties agreed to take "all necessary measures for the further development of cooperation in the area of manned space flights for scientific and practical objectives". However, due to the US position this central point of the Agreement remains unfulfilled. In 1982 the US Administration refused to prolong the 1977 Agreement, and this reflected Reagan Administration's general policy of deteriorating relations with the Soviet Union and using space technology for military purposes.

* * *

In its broad international cooperation in outer space with states of different social systems, the Soviet Union has concluded many intergovernmental and interdepartmental agreements which determine the legal mechanism of cooperation, the responsible organisations and, in some cases, specific joint projects. Such agreements have been concluded, for example, on a multilateral basis with nine socialist states (the Intercosmos Programme), and on a bilateral basis with India, France, Austria, Sweden and other states, and also with intergovernmental organisations.

By implementing the principle of international cooperation in outer space, the Soviet Union actively contributes to the observance of Art. I of the 1967 Space Treaty which says that "the exploration and use of outer space... shall be carried out for the benefit and in the interests of all countries."

4. Cooperation of States in Space Exploration Within the Framework of Universal Organisations

a) United Nations

The United Nations began to consider questions relating to the exploration and use of outer space for peaceful purposes soon after the first artificial earth satellite was put into orbit in October 1957. On March 15, 1958, the Soviet Government formulated the idea of using the United Nations to develop international cooperation in

outer space in its proposal tabled at the 13th Session of the General Assembly.[1]

The United Nations, as a centre of coordinated action of states in the achievement of common aims, including the exploration and use of outer space, discharges the relevant functions through its main organs and subsidiary bodies.

The UN General Assembly plays the leading role in promoting interestate cooperation in the exploration and use of outer space.

Since 1958, the General Assembly has been constantly examining the political and legal, and technical problems of space activity, scoring its biggest success in the sphere of legal regulation.

The General Assembly's work of forming and developing international space law is manifested in:

the setting up of the Committee on the Peaceful Uses of Outer Space (COPUOS);

the formulation of the tasks of studying and elaborating the legal problems involved in the exploration and use of outer space;

the adoption of recommendations for the UN specialised agencies and the International Atomic Energy Agency;

the adoption of resolutions on COPUOS reports;

the approval of COPUOS recommendations concerning the legal regulation of states' space activity;

the endorsement of draft space agreements prepared within COPUOS;

the drafting of individual articles of these agreements at General Assembly sessions; and

the invitation of all states to sign the space agreements approved by the General Assembly.

The first resolutions on outer space, the drafts of the 1967 Space Treaty, the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, the Convention on International Liability for Damage Caused by Space Objects, the Convention on Registration of Objects Launched into Outer Space, the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, Convention on Principles Governing the Use by States of Artificial Earth Satellites for Direct Television Broadcasting–all of them adopted by the UN General Assembly–are but a few stages in its activity in the legal regulation of space exploration.

Committee on the Peaceful Uses of Outer Space (COPUOS)

The Soviet proposal of March 15, 1958 contained the idea of setting up a special UN body for international cooperation in space exploration. Its composition and main areas of activity, as a subsidiary body of the UN General Assembly, were determined by Resolutions 1472 (XIV) of 1959, and 1721 (XVI) of 1961.

[1] UN Doc. A/3818, 17 March 1958.

These resolutions authorised the Committee to deal with the scientific, technical and legal questions of the exploration and use of outer space and to be the central coordinating body in the sphere of international cooperation in outer space.

Resolution 1472 (XIV) provided for a Committee membership of 24 states. Today its membership includes 53 states representing different socio-political systems and geographical areas of the world.

In 1962, the COPUOS session endorsed consensus as a procedural principle underlying the work of the Committee and its auxiliary bodies.

In 1962, COPUOS set up the Legal Sub-Committee and the Scientific and Technical Sub-Committee. Whenever necessary, it may establish *ad hoc* working groups. For example, it formed working groups for navigation satellites, direct broadcasting satellites, and remote sensing satellites.

The legal Sub-Committee concentrates on elaborating drafts of multilateral agreements regulating the exploration and use of outer space, while the Scientific and Technical Sub-Committee is responsible for conducting exchange of information on space research, stimulating international space programmes, promoting the development of applied satellite systems, training personnel, especially in developing nations, supervising international launching sites and registering space objects.

The UN Secretariat. As the United Nations expanded its work in exploration and use of outer space, the UN Secretariat set up several branches to give administrative and technical assistance to the UN Secretary-General, COPUOS and other bodies: the Outer Space Affairs Group of the Department of Political and Security Council Affairs, the Outer Space Affairs Division of the Office of Legal Affairs, the Resources and Transport Division of the Department of Economic and Social Affairs, etc.

The UN Secretary-General. The agreements drawn up within the UN framework vest the UN Secretary-General with fairly broad powers in coordinating cooperation in outer space. For example, the Secretary-General is responsible for collecting and disseminating information on the space activity of states (Art. XI of the Space Treaty), for keeping and ensuring access to the Register that contains information about space objects (Arts. II, III, V, VI of the Convention on Registration), for collecting and disseminating information about any phenomena that constitute a danger to the life or health of astronauts (Art. V of the Space Treaty) and about states' rescue operations and assistance to astronauts who are in distress or have been forced to make an emergency landing (Arts. 1, 2, 3 and 5 of the Agreement on the Rescue of Astronauts), and for appointing the Chairman of the Claims Commission under the Convention on International Liability (Arts. XVI and XIX). The Secretary-General is also

the depositary of the Convention on Registration and Agreement on the Moon and Other Celestial Bodies.

b) Specialised UN Agencies.

Many of the UN specialised agencies play an important part in international cooperation in the exploration and use of outer space. They are called upon to coordinate the activities of states in special fields of international interest and which do not affect general political and legal problems.

For example, the International Telecommunication Union (ITU) works out regulations which assign frequencies for space telecommunication, studies the possibilities of integrating space systems into the world telecommunication system, investigates the economic aspects of space communication and exchanges information about the use of satellites for long-distance communication.

The World Meteorological Organisation (WMO) deals with the problems of states' cooperation in the use of meteorological satellites. In recent times it has concentrated on the possibility of using satellites for the global collection of weather information in different areas and from different sources.

The United Nations Educational, Scientific and Cultural Organisation (UNESCO) studies the problems of using space communications to improve educational standards, disseminate information, promote social development and expand cultural exchanges, and also does research into the remote sensing of natural resources by means of space technology.

The World Health Organisation (WHO) contributes to interstate cooperation in space medicine and biomedical research in outer space to benefit terrestrial medicine.

The Intergovenmental Maritime Organisation (IMO) and the International Civil Aviation Organisation (ICAO) are engaged in creating systems of navigation satellites.

Other UN specialised agencies also make an appreciable contribution to organising international cooperation in the exploration and use of outer space.

c) UN Conferences on the Peaceful Uses of Outer Space

The UN Conferences on the Peaceful Uses of Outer Space, held in 1968 and 1982, are of great significance in the development of international cooperation in space exploration. Most UN member-states took part in their work. Ninety-four states and several dozen of international organisations participated in the 1982 Conference. They analysed the present state of cooperation in outer space, outlined the prospects for and ways of improving this cooperation and of using the achievements of space science and technology to promote humanity's progress, with account of the special needs of the developing

nations. These conferences dealt chiefly with the expansion of peaceful cooperation in telecommunication and navigation, meteorology, the study of the Earth's natural resources by means of satellites, and space biology and medicine.

The 1968 Conference, and especially the 1982 Conference, expressed the world community's concern about the growing threat of outer space being used for military purposes. The 1982 Conference reflected two diametrically opposite approaches to the use of outer space for military purposes. The Soviet Union once more stated its invariable desire to ensure that outer space remain peaceful and facilitate rapprochement and better mutual understanding between nations. The Soviet representatives called on the Conference delegates to support their proposal to conclude a treaty banning the deployment of weapons of any kind in outer space.

A different position was taken by the US delegation, which was silent about the need to preserve outer space as a field of peaceful activities and sought to block the inclusion of statements to this effect in the Conference's final report. Only the joint efforts of the socialist, developing and some West European countries forced the USA to agree to reflect in the Conference report the deep concern about the possibility of turning outer space into an arena of the arms race. The US delegation agreed to the final wording of the report, fearing that it could be fully isolated at this broad international forum.

5. Interstate Cooperation in Space Exploration Within the Framework of Intergovernmental Space Organisations

a) *The International Maritime Satellite Organisation*

(INMARSAT). The intensification of research into the World Ocean and the development of merchant marine and fishing has accentuated the need to establish reliable maritime satellite communications. The use of maritime satellites is the most radical way of resolving this problem.

In 1966, the Intergovernmental Maritime Consultative Organisation (IMCO)[1] began to study the possibility of creating a global system of maritime satellite communications. This work was conducted by a group of experts in maritime satellites.

In November 1972, the Soviet Union advanced a draft proposing the setting up of the INMARSAT. It took three sessions of the Conference founding a new organisation under the IMCO aegis to adopt final documents. At long last, the third session of the Confer-

[1] This organisation is now called International Maritime Organisation (IMO).

ence adopted two documents, which came into force on July 16, 1979.[1]

The INMARSAT constituent instruments include an intergovernmental Convention, which defines the Organisation's purposes, and an Operating Agreement, which governs technical and financial matters. Both of these were signed either on behalf of governments or of competent state or private organisations appointed by them.[2]

According to the Convention, the Organisation's purpose is to make provision for the space segment necessary for improving maritime communications, thereby "assisting in improving distress and safety of life at sea communications, efficiency and management of ships, maritime public correspondence services and radiodetermination capabilities."[3]

The Convention on INMARSAT notes that the Organisation shall act in accordance with the universally recognised principles and rules of international law and exclusively for peaceful purposes. All states without any discrimination whatsoever may be parties to this Convention. Today, nearly 40 states, including the USSR, participate in the Convention.

States alone are the bearers of rights and duties. As for the Operating Agreement, either states or competent national organisations appointed by their governments may be its signatories.

The INMARSAT organs are the Assembly, the Council and the Directorate, headed by the Director-General. All the parties to the Convention without exception are members of the Assembly and attend its sessions, which are convened at least once every two years. The Assembly shall consider and review the activities, purposes, general policy and long-term objectives of the Organisation and express views and make recommendations thereon to the Council; it shall adopt decisions on the Council's recommendations and ensure that the Organisation act in accordance with the provisions of the Convention and the UN Charter: it shall settle questions relating to INMARSAT's relations with states and other international organisations (Art. 12).

Each party has one vote in the Assembly (Art. 11). Decisions on the questions of substance are taken by a two-thirds majority, and on procedural matters by a simple majority of those present and voting.

The Council comprises 22 participants in the Operating Agreement, of whom 18 representatives are the largest investors in the Organisation, and four representatives are elected additionally to secure equitable geographical representation on the Council.

[1] See *Convention and Operating Agreement on the International Maritime Satellite Organisation*, Moscow, 1981, p. 86.

[2] The USSR Ministry of the Merchant Marine set up an association–Morsvyazsputnik–to take part in the Operating Agreement.

[3] *Manual on Space Law*, Vol. II, New York, 1979, p. 291.

The Council shall have the responsibility to make provisions for the space segment necessary for carrying out the purposes of the Organisation in the most economic, effective and efficient manner consistent with the Convention and the Operating Agreement, to regulate the procedure for issuing permits of access to the space segment, and to determine its financial policy (Art. 15).

Council sessions are held at least three times a year. The decision-making procedure is based on weighted voting. No representative may cast on behalf of one signatory more than 25 per cent of the total voting participation. If a signatory represented on the Council is entitled, based on its investment share, to a voting participation in excess of 25 per cent of the total voting participation in the Organisation, it may offer to other signatories any or all of its investment share in excess of 25 per cent. If other signatories do not cover it fully, the weight of the vote of the signatory in possession of it may be above 25 per cent by the remaining nondistributed part. (Art. 14. 3).

The question of voting in the Council was one of the most complicated and controversial ones. The Soviet delegation at the INMARSAT Founding Conference opposed the system of weighted voting and sought to include in the Convention a clause giving each representative on the Council one vote. But for the sake of creating the organisation, the USSR agreed to accept this system of voting provided that it will not set a precedent.

The Council must seek to take decisions by consensus. If the latter cannot be achieved, decisions on questions of substance are taken by a majority of Council members representing no less than 67 per cent of the total voting participation of representatives or groups of representatives on the Council. Decisions on procedural matters are taken by a simple majority of those present and voting, with each representative having one vote.

INMARSAT's executive body is the Directorate, headed by a Director-General, appointed for a term of six years.

The founding of INMARSAT is evidence that the development of space exploration promotes multilateral cooperation in which international organisations are playing an ever bigger role.

b) *The Intersputnik International Organisation of Space Communications*

At the UN Conference on the Peaceful Uses of Outer Space, held in August 1968, nine socialist countries proposed that an international space communication organisation–Intersputnik–should be set up and be open to all countries. But this proposal did not receive support due to the position held by some Western powers.

In developing cooperation among socialist states in space communications, the governments of Bulgaria, Cuba, Czechoslovakia, the

GDR, Hungary, Mongolia, Poland, Romania and the Soviet Union signed an Agreement on the Establishment of the Intersputnik International System and Organisation of Space Communications on November 15, 1971. The Agreement came into force on 12 July 1972.[1] Vietnam and some other states later became signatories to it.

This international organisation is based on the principles of respect for the sovereignty and independence of states, equality and non-interference in the internal affairs of all states, as well as mutual assistance and mutual benefit. According to the Agreement, the Intersputnik activities are aimed at developing economic, scientific, technical, cultural and other relations between member-states through satellite communication. Intersputnik is an open international organisation whose purpose is to ensure cooperation and coordination of efforts in the design, establishment, operation and development of the communication system via satellites. (Art. 1)[2]

The international communication system is to be created in several stages. At the first stage, the Soviet Union, guided by the principle of socialist internationalism, granted its communication channels to the Organisation free of charge. At the second stage, the member-states used satellite communication channels on a rental basis (Intersputnik has leased telephone and television channels of Soviet communication satellites since 1976). At the third stage (commercial exploitation), the Organisation, when it deems this necessary, will acquire the whole space complex or will rent it from member-states.

The Board, composed of one representative from each member of the Organisation, is the governing body. In accordance with the principle of the sovereign equality of states, each member has one vote in the Board, regardless of its contribution to the Organisation's budget or any other terms. At its sessions, the Board deals with all matters covered by the Agreement: it determines the general policy of the Organisation, the trends of the system's development, and the distribution of communication channels; it examines and approves the programme of putting into orbit the Organisation's communication satellites, and examines and approves the budget of the Organisation, etc. (Art. 12).

The Board shall work for unanimous decision-making. Where unanimity is not achieved, decisions should be taken by not less than two-thirds of the votes. The Board's decisions are not binding on those states which have not supported them and made their reservations known in writing.

The Directorate, headed by the Director-General, is a standing executive and administrative body of the Intersputnik. It is fully ac-

[1] *Manual on Space Law*, Vol. II, New York, 1979, pp. 241-252.
[2] Ibid., p. 241.

countable to the Board. The Directorate's personnel is selected with regard for professional competence and equitable geographical representation.

c) *International Telecommunications Satellite Organisation* (INTELSAT)

INTELSAT was created in 1964 when 17 states signed an Intergovernmental Agreement Establishing Interim Arrangements for a Global Commercial Communications Satellite System which contained the basic organisational principles of the system's functioning, and also a Special Agreement. The latter, signed by government representatives or authorised delegates of the national communications organisations, determined the technical and financial terms of the system's commercial functioning.

For nearly nine years INTELSAT, to which about 70 states acceded, functioned on the basis of Interim Arrangements.

Many states were disappointed with these Agreements because they contained some discriminatory clauses. Only member-states of the International Telecommunication Union could join INTELSAT. An Interim Communications Satellite Committee (ICSC) consisting of 18 representatives was set up as the Organisation's governing body. The number of votes enjoyed by a Committee member was proportionate to the investment share, and this gave the USA 53 per cent of the votes. The actual owner and manager of INTELSAT was the US Communications Satellite Corporation (COMSAT), responsible for the design, construction, maintenance and operation of the space segment of the system.

On August 20, 1971, the INTELSAT Definitive Arrangements were signed in Washington and came into force on February 12, 1973.[1] The Definitive Arrangements are composed of two related international agreements. The first of these, the Agreement Relating to the International Telecommunications Satellite Organisation, contains basic provisions governing the functioning of INTELSAT, and four annexes. The second, the Operating Agreement signed by representatives of governments or national communications organisations, has only one annex.

INTELSAT's main purpose is to "carry forward on a definitive basis the design, development, construction, establishment, operation and maintenance of the space segment of the global commercial telecommunications satellite system" (Art. II). This system is "required for international public telecommunications services of high quality and reliability to be available on a non-discriminatory basis to all areas of the world" (Art. III).[2]

[1] See *Manual on Space Law*, op. cit., pp. 159-252.
[2] Ibid., p. 162.

Over 100 states are members of INTELSAT (the USSR does not participate in it). Although the founders of the Organisation claim that this system is a global one, the Definitive Arrangements contain a discriminatory provision which makes membership in the Organisation open only to ITU members.

The space segment in INTELSAT belongs to those states which finance the design, construction and functioning of the system. The space segment owners control the entire system, even if they are not engaged in building ground stations. To participate in the management of the system, a state must contribute its share (not less than 1.5 per cent) of the total costs. As a result, the developing nations, which constitute a majority in the Organisation, are barred from its management. The assignment of satellite communication channels and other services is proportionate to the investment share of the member-states.

According to Art. VI of the Definitive Arrangements the structure of INTELSAT includes the Assembly of Parties, the Meeting of Signatories (States and national companies) the Board of Governors, and an executive organ, responsible to the Board of Governors.

The Assembly of Parties as the principal organ of the Organisation has the "power to give consideration to general policy and long-term objectives of INTELSAT" which are "primarily of interest to the Parties". The Assembly has the power to "formulate views or make recommendations" (Art. VII), which is why the leading role in the Organisation belongs to the Board of Governors. Represented on this body are the signatories, whose "minimum investment share ... shall be equal to the investment share of the signatory holding position thirteen in the list of the descending order of size of initial investment shares of all the signatories" (Art. IX (b)).[1] The number of votes controlled by Board members depends on their financial contribution, and this secures for the USA the leading role in this body.

Thus, the structural changes introduced by the Definitive Arrangements did not shake the USA's dominant position in INTELSAT. The USA seeks to put this Organisation to maximum use not only for the purposes of satellite communications but also for settling problems that go far beyond the sphere of space communications: the distribution between states of positions on the geostationary orbit and of frequency channels, approval of satellite capacities and direction of beamed broadcasts, problems of sea navigation, etc.

These efforts stem from the US desire to use this international organisation to secure key positions in the exploration and use of outer space.

[1] Ibid., p. 172.

d) *European Space Agency*

In the early 1960s, some West European countries began to explore outer space. They faced a number of complex economic, political, technical and organisational problems. As a result of long discussions, these countries decided to pool their efforts within the framework of international organisations and to pursue an independent policy in space exploration. In March 1962, they signed the Convention for the Establishment of a European Organisation for the Development and Construction of Space Vehicle Launchers (ELDO), which was open to other West European countries. The Convention came into force in February 1964. In June 1962, the Convention for the Establishment of a European Space Research Organisation (ESRO) had been signed, and it entered into force in March 1964. However, the formation of West European space organisations could not resolve the political and financial disagreements existing since the day a united space policy was first conceived.

The end of 1968 saw the adoption of a decision concerning the establishment of a single organisation—the European Space Agency.

The establishment of this body dragged on for many years because of differences between states over financing and the distribution of posts in the Organisation's leadership. It was only in 1975 that the representatives of Belgium, Denmark, France, the FRG, Great Britain, Ireland, Italy, Spain, the Netherlands, Sweden and Switzerland signed a Convention for the Establishment of a European Space Agency.[1] Austria, Canada and Norway have observer status.

Under Art. II of the Convention, "the purpose of the Agency shall be to provide for and to promote, for exclusively peaceful purposes, cooperation among European States in space research and technology and their space applications, with a view to their being used for scientific purposes and for operational space applications systems:

"a) by elaborating and implementing a long-term European space policy, by recommending space objectives to the Member-States, and by concerting the policies of the Member-States...;

"b) by elaborating and implementing activities and programmes in the space field;

"c) by coordinating the European space programme and national programmes, and by integrating the latter progressively and as completely as possible into the European space programme, in particular as regards the development of applications satellites;

"d) by elaborating and implementing the industrial policy appropriate to its programme..."[2]

The Agency has the task of internationalising the member-states space programmes and coordinating their national space policies. The

[1] See *Manual on Space Law*, Vol. II, op. cit., pp. 259-291.
[2] Ibid., p. 260.

concrete methods and forms of elaborating a single space programme and policy restrict the rights of the individual member-states, particularly in the sphere of cooperation with other countries, which to some extent is interference in the internal affairs of the member-states.

The organs of the Agency include the Council, which is the principal body and consists of representatives of all member-states, each of whom has one vote, and the Director-General assisted by a staff.

The Agency's space programmes are divided into obligatory programmes financed by all member-states, and optional programmes financed by the signatories concerned.

e) *The Arab Satellite Communication Organisation (ARABSAT)*

This organisation, founded in 1976, includes 21 states, all members of the Arab League.

The main aim of ARABSAT is "to provide and set up an Arab Space Sector for general and specialised services in the field of telecommunications for all member-states of the Arab League". In addition, the Organisation may undertake the following activities: a) assisting Arab countries financially or technically in designing and constructing ground stations; b) undertaking research and special studies concerning space science and technology.[1]

ARABSAT should be an addition to the ground section of regional remote telecommunications system and provide new possibilities for exchanging TV programmes among Arab countries. The equipment of the system must provide for regional and national telephone, telegraph and telex communications; and regional, national and local TV broadcasting.

Structurally, ARABSAT consists of the General Body Meeting (the main organ), the Board of Directors and the Executive Committee. The General Body Meeting is attended by communication ministers or their deputies. Decisions on basic matters are made by two-thirds of the members present and voting (each member has one vote), while decisions on procedural matters are taken by a simple majority vote.

The main organ of ARABSAT determines the general activities and policy of the Organisation. It has fairly broad powers: it defines the Organisation's development plans, reviews and adopts projects for the expansion and improvement of the space sector, introduces rules and standards for the setting up and functioning of ground stations, etc. It also approves reports made by the Board of Directors, elaborates principles of relations between ARABSAT and other international organisations, and examines disputes and claims.

The Board of Directors consists of nine members, five of whom

[1] Ibid., pp. 345, 347.

are elected according to their country's financial contribution to the Organisation's budget, while the other four members are elected by the General Body Meeting for two years, with subsequent replacement from among the remaining members. Each member of the Board of Directors has one vote. The Board is called upon to realise the plans, decisions and recommendations adopted by the main body of ARABSAT.

There are several sectors and administrative divisions in the Executive Committee, which is headed by the General Manager.

6. International Cooperation Within the Framework of Non-Governmental Space Organisations

More complicated international relations are appreciably increasing the significance of non-governmental ties and contacts, which today embrace different spheres of human activity. This enables us to speak about international non-governmental organisations–the chief form of such cooperation–as an important element of present-day international life. This is exemplified by the activity of such non-governmental space organisations as the Committee on Space Research (COSPAR), the International Astronautical Federation (IAF) and its affiliations–the International Academy of Astronautics (IAA) and the International Institute of Space Law (IISL).

Scientific societies, institutions and individual scientists rather than states are the founding members of these organisations, which came into being long before the appearance of intergovernmental space organisations and for some time were the sole bodies within whose framework scientists from different countries could meet to discuss space exploration problems.

Non-governmental space organisations are not engaged in space research and experimentation, but their activities promote broad exchange of information and discussion of scientific problems, and strengthen international cooperation.

a) The *Committee on Space Research (COSPAR)* was set up in October 1958 on the initiative of the International Council of Scientific Unions (ICSU) to continue joint space exploration after the International Geophysical Year ended.

The ICSU resolution on COSPAR said that the principal task of the new international organisation was to enable scientists throughout the world to make wide use of satellites and space probes for space research and the exchange of scientific information on a reciprocal basis.

COSPAR was in fact the first non-governmental organisation founded to encourage international cooperation in the exploration and use of outer space.

COSPAR is chiefly engaged in studying the results of basic research obtained by means of rockets, satellites and spacecraft.

It unites academies of sciences and major scientific institutions of over 30 countries and the ten international scientific unions that compose the ICSU. Soviet scientists participate in COSPAR through the Intercosmos Council under the USSR Academy of Sciences, which has been an active COSPAR member since 1959 to this day.

The Plenary Session is the leading organ of COSPAR. In between the sessions COSPAR is directed by the Executive Council, consisting of a President, two Vice-Presidents and several members.

COSPAR maintains broad and fruitful contacts with international organisations which promote international cooperation in the exploration and use of outer space. In 1961, COSPAR was given consultative status under the UN Committee on the Peaceful Uses of Outer Space. It publishes an information bulletin and the transactions of its regular sessions. Since 1980 COSPAR sessions have been taking place every two years (previously they were held annually). Seven interdisciplinary commissions have replaced the former working groups.

b) *The International Astronautical Federation (IAF)* was formed in 1952, but it dates back to 1950, when the astronautical societies of Austria, Argentina, Denmark, France, the FRG, Great Britain, Spain and Sweden decided to found an international space organisation.

IAF is guided by its Constitution, which was adopted in 1961 and amended in 1968 and 1974. It considers concrete technical problems (including those of developing rocket engines and spacecraft) and the socio-political and legal aspects of the exploration and use of outer space. This is the only non-governmental space organisation that deals with a broad spectrum of problems arising from the use of outer space.

According to its Constitution, IAF promotes astronautics for peaceful uses and disseminates information about space research, cooperates with national and international organisations on the technical and socio-legal questions of space exploration, stimulates public interest in these problems, and arranges international astronautical congresses, symposiums and colloquiums.

IAF has three categories of members. The first includes national members—the astronautical societies of different countries. Each state may be represented by several national societies, but only one of them has a vote at the IAF General Assembly on all questions. The second category covers universities, institutes, and laboratories which train personnel or conduct research in the field of astronautics. The third category includes international scientific organisations whose purposes correspond to IAF goals.

Today, IAF incorporates 58 national astronautical societies of 36 countries. Soviet scientists have been taking part in it since 1955.

Since 1976 the Intercosmos Council under the USSR Academy of Sciences has been a voting member of IAF.

The IAF supreme body is the General Assembly, which is attended by the voting members. In between the General Assembly sessions the IAF is governed by a Bureau consisting of a President, Past-President and five Vice-Presidents, all of them having the right to vote. The non-voting Bureau members are the Presidents of the International Academy of Astronautics and the International Institute of Space Law and also the IAF General Counsellor.

The IAF Constitution says that the elections of the Organisation's leading bodies must take into consideration the contribution of countries to the exploration and use of outer space and the principle of equitable geographical representation.

Since its inception the IAF has been holding annual international astronautical congresses which attract a large number of scientists and specialists from many states.

The IAF has consultative status in the UNESCO and the ECOSOC and also observer status on the UN Committee on the Peaceful Uses of Outer Space. In 1960, the IAF set up two new scientific organisations: the International Academy of Astronautics (IAA) and the International Institute of Space Law (IISL). Their statutes were approved by the 11th IAF Congress, with subsequent amendments.

c) *The International Academy of Astronautics (IAA)* holds regular scientific meetings (every two years), conducts research into and makes reports on problems of astronautics, issues journals and other scientific publications, and awards prizes and medals.

The Academy is based on individual membership and consists of persons who are widely known for their contribution to space exploration. Today its membership includes over 700 scientists from 30-odd countries.

There are two categories of members—full members and corresponding members. Both are regarded as academicians, but the right to vote belongs only to full members, who are elected for life.

The supreme body of the Academy is the Board of Trustees, which is made up of a President, a Past-President, four Vice-Presidents, and 12 Trustees. There are several scientific committees within the IAA, and it issues a popular publication, *Acta Astronautica*, and also an Astronautical Multilingual Dictionary.

d) *The International Institute of Space Law (IISL)* was set up to replace the Permanent Legal Committee of the IAF.

The Institute studies the legal and sociological aspects of space activity, organises annual colloquiums on space law together with the IAF Congresses, conducts research into and makes reports on the legal aspects of the exploration and use of outer space, publishes materials on space law and awards prizes. Its associates teach space law.

The Institute is also based on individual membership. Its members are elected for life, but if a member has no contact with the Institute for a period exceeding three years, his name is struck off the list of Institute members. Today the IISL membership is about 400 scientists from about 50 countries.

The Institute is governed by a Board of Directors consisting of 15 members: a President, two Vice-Presidents, a Secretary and 11 members. The Board members are elected according to the principle of adequate representation of different legal systems.

The IISL represents the International Astronautical Federation in the Legal Sub-Committee of COPUOS. It annually publishes collected papers to be submitted to colloquiums it organises, and also information about its activities.

7. The Problem of Setting Up an International Space Body

The space era has seen the formation of a certain organisational legal mechanism governing cooperation in outer space, but the constantly increasing scale of states' activities and cooperation in the exploration and use of outer space makes it necessary to improve the forms and methods of coordinating the international efforts in outer space. Opinions differ on this matter in scientific literature.

Some statesmen and jurists propose that the activities of the existing international space organisations and UN bodies be stepped up or new organisations created to promote international cooperation in outer space along various lines. Such proposals testify to the fact that the present level of space exploration requires broader international cooperation in this field. At the same time the formation of new international organisations on narrow and specific scientific and technical problems of the exploration and use of outer space could lead to the creation of an unjustifiably large number of international space organisations, decentralise international efforts in this field, and cause difficulties.

Other proposals substantiate the need for a new international organisation of the type of the International Atomic Energy Agency or UN specialised agencies under the tentative name of "International Space Agency" as a specialised universal organisation to coordinate joint efforts of all states in basic directions of the exploration and use of outer space, and make recommendations in this field.

The problem of improving the mechanism of cooperation in outer space has acquired new importance with the official Soviet proposal to set up a World Space Organisation for international cooperation in the peaceful uses of outer space. This proposal is part of the initiative on International Cooperation in the Peaceful Uses of Outer Space in the Context of Its Non-Militarisation put forward by the Soviet Union

in the United Nations in 1985.[1]

The Soviet proposal says that the World Space Organisation should:

– secure access to scientific and technical achievements in the peaceful uses of outer space for all states on the basis of non-discrimination and mutual benefit;

– realise international projects involving space research and use of space technology;

– help the developing nations to become involved in the exploration and use of outer space and to use the practical results of such activities to further their economic and social development and meet their needs without any conditions, which infringe on their sovereignty;

– coordinate the activities of other international organisations in the peaceful uses of outer space;

– promote the observance of agreements concluded or to be concluded in order to prevent an arms race in outer space and exercise appropriate control over this observance.

The idea of creating a universal space organisation has been mooted in the works of jurists of several countries. The 20th International Colloquium on space law had on its agenda an item concerning the creation of such an organisation.[2] The Soviet Union also proposes the convocation of a representative international conference attended, among others, by the world's leading powers in space exploration to consider comprehensively the question of international cooperation in the peaceful use and non-militarisation of outer space. The conference could also examine the question of creating a world space organisation for international cooperation in the peaceful exploration and use of outer space. In this context the UN General Assembly could set up a preparatory committee open to all states. All states could inform the committee about their views and proposals regarding the convocation of an international conference. The Soviet proposals emphasise that the new organisation could be created only when effective agreement is reached on the non-militarisation of outer space.

In June 1986, the Soviet Union initiated a new proposal of fundamental importance aimed at ensuring Star Peace rather than Star Wars in outer space. This proposal is a logical continuation of the Soviet policy of peaceful space exploration.[3]

Viewing cooperation in outer space as a confidence-building factor and an earnest of successful development of space exploration, the Soviet Union has submitted a *stage-by-stage programme of joint*

[1] *Pravda*, August 17, 1985.

[2] *Proceedings of the 20th Colloquium on the Law of Outer Space*, California, 1978, pp. 15-46.

[3] *Pravda*, June 13, 1986.

practical actions in peaceful space exploration. The three-stage programme is designed to lay a solid material, political, legal and organisational groundwork for Star Peace by the year 2000.

The first (organisational) *stage* will last five years. It provides for the study of the nations' requirements in space technology and the convocation of an appropriate international conference to approve a programme of action for the 1990s and after, and to found a World Space Organisation (WSO), which would launch specialised cooperation programmes.

Communications, navigation, rescue operations, remote sensing of the Earth, the preservation of its biosphere, development of weather and alerting services, the use of new sources of power, creation of new materials and processing technologies, exploration of outer space and celestial bodies–such are the *principal tasks common to all countries*, which require a pooling of efforts to draw up major projects of using space technology. In the opinion of the Soviet Government, international projects could be financed by the space powers and other industrialised countries.

The second stage (material preparations) would cover the first half of the 1990s and deal with designing and producing space technology under agreed projects. Cooperation in the preservation of the Earth's biosphere with the aid of space technology would be a main task of this stage. Simultaneously, the activities of WSO could be substantially expanded.

At *the third* (implementation) *stage*, all areas of cooperation would be given material content: spacecraft, including orbital stations, research and production platforms and manned interplanetary ships would be launched, the functioning of requisite ground systems properly organised, and space technology would start operating on a self-supporting basis, yielding practical returns.

The Soviet proposal also deals at length with the improvement of the legal and organisational mechanism of international cooperation in outer space. The USSR has confirmed and developed its 1985 proposal to set up a World Space Organisation.

Late in 1986, Mikhail Gorbachev made a statement in the Indian Parliament of the setting up by the leading space powers of an international centre for joint space research, the development of space technology by orders of developing nations, and for training specialists and astronauts from these countries at a future school, to be supplemented by a testing ground for launching space objects.

Chapter 4

PRIVATISATION OF SPACE ACTIVITY AND ITS LEGAL CONSEQUENCES

1. Principle of Freedom of Outer Space and Space Activity of Non-Governmental Legal Entities

In the past few years, national and international conferences and juridical literature have considered the legal grounds and consequences of the space activities of private enterprises.[1] Some Western authors directly or indirectly advance the thesis that there is a principle of freedom of private enterprise in outer space sanctioned by international law.

An analysis of the current norms of international space law shows that the UN-drafted international agreements say nothing about the freedom of private enterprise. These agreements do not even mention the activities of private enterprises in outer space. Art. VI of the Space Treaty deals with the responsibility of states for the entire national activity in outer space and in this connection stipulates a number of rules by which states should be guided in the event that "non-governmental legal entities" are allowed to engage in space activities. This concept is not equivalent to the concept of "private enterprise"; it is much broader and could imply, in addition to private enterprises, national and international non-governmental organisations. However, the Space Treaty (the only treaty that mentions "non-governmental legal entities") says nothing about the freedom of their space activity. Indirectly recognising the possibility of space activity by non-governmental legal entities, the Treaty regards it as a special case, as an exception to the general rule, and circumscribes such activity with a number of conditions, chief among which is the state's permission and constant supervision of this activity.

Even the titles, "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies", and "Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer

[1] See, for example, *Proceedings of the 24th Colloquium on the Law of Outer Space*, New York, 1982, pp. 1-87; *Legal Framework for Economic Activity in Space*, Cordoba, 1982; *Journal of Space Law*, Vol. 8, No. 1, 1980, pp. 1-7; Vol. 9, Nos. 1-2, 1981, pp. 53-73; Vol. 10, No. 2, 1982, pp. 107-138; "Private Enterprise and the Exploration of Outer Space", UN Doc. A/AC. 105/L. 131, 2 May 1983.

Space", unanimously approved by the UN General Assembly,[1] clearly indicate that reference is made precisely to the "activities of states". The 1967 Space Treaty and other multilateral space agreements formulate the rights and duties of states and intergovernmental organisations and not of private persons and enterprises. The most important principle of international space law—that of free exploration and use of outer space—fixed in Art. I of the Space Treaty, is directly addressed to states and can in no way be interpreted as a principle of free private enterprise in outer space. Interpretation along these lines would contradict the letter, meaning and spirit of contemporary space law, which from the very beginning proceeded from the public character of space activity, from its great significance for humanity. The idea that space activity must serve public and not private interests is reflected in Art. I of the Space Treaty. "The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind."

This provision of the Space Treaty determines the general idea, the general direction of the legal regulation of space activity, the spirit of that new branch of international law. From this stem the principle of non-appropriation of outer space and its component parts, the principle of carrying out space activity in keeping with international law, the UN Charter included, in the interest of maintaining international peace and security and developing international cooperation and mutual understanding, the principle of the international responsibility of states for national space activity, and other principles and norms recorded in the Space Treaty and the agreements that develop it.

The content and formulation of the principles and norms of international space law show that they are oriented toward the exploration and use of outer space by states jointly or under their national programmes. The principle of interstate cooperation in the exploration and use of outer space plays a special role in international space law. For most developing nations this cooperation is the only possible way of using space technology to develop their economies and cultures.

Art. VI of the Space Treaty, which mentions the space activity of non-governmental legal entitites, reproduces Item 5 of the 1962 Declaration of Legal Principles.[2] It must be noted that the initial draft Declaration, submitted to the UN by Great Britain and the USA,[3]

[1] *UN General Assembly Official Records, 18th Session, 1962, Resolutions*, Supplement No. 15, New York, 1963, pp. 15-16.

[2] *UN General Assembly Official Records, 18th Session, 1962, Resolutions*. Supplement No. 15, pp. 15-16.

[3] Un Doc. A/C. 1/879, 4 December 1962, p. 1; UN Doc. A/C.1/881, 8 December 1962, p. 1.

made no mention of the space activity of non-governmental legal entities. The Soviet draft, which was tabled first,[1] stressed that "all activities pertaining to the exploration and use of outer space shall be carried out solely and exclusively by States" (Item 7 of the Soviet draft). The objections raised by Western powers and taken into account in the new formulation of the Soviet draft, concerned chiefly the permissibility of space activity by international organisations and not by private individuals and private enterprises. At a later stage in the drafting of the Declaration, Britain proposed the incorporation in Item 5 of a formulation, similar to the present one, concerning the states' responsibility for the space activity of non-governmental legal entities, which was subsequently reproduced in the Space Treaty.

The history of this formulation provides yet more proof that the Western powers have never proposed the adoption of the principle of "free private enterprise in outer space" in addition to the other basic principles of international space law. The socialist and many of the developing countries shared the view that only states, jointly or separately, should carry on activity in outer space.

The formulation in Art. VI of the Space Treaty, adopted by mutual compromise, cannot under any circumstances be treated as recognition of the principle of "free private enterprise in outer space". International space law does not grant any rights and freedoms directly to private persons and private enterprises. The textual and historical construction of Art. VI of the Space Treaty, in conjunction with its other Articles, allows us to speak not about a principle of "free private enterprise", but about the indirect recognition of a state's right to permit, by way of exception, space activity by non-governmental legal entities (including private enterprises) on two conditions.

a) that the state bears international responsibility for their activity;

b) that the state constantly supervises this activity and ensures that it conforms to the provisions of the Space Treaty.

2. International Responsibility of States for the Space Activity of Non-Governmental Legal Entities

Art. VI of the Space Treaty says: "States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the Moon and other celestial bodies, shall require authorisation and continuing supervision by appropriate State Party to the Treaty." Art. VII

[1] UN Doc. A/AC.105/C. 2/L. I., 6 June 1962.

of the Treaty stipulates that "Each State Party to the Treaty that launches or procures the launching of an object into outer space, including the Moon and other celestial bodies, and each State Party from whose territory or facility an object is launched, is internationally liable for damage to another State Party to the Treaty or to its natural or juridical persons by such object or its component parts on the Earth, in air space or in outer space, including the Moon and other celestial bodies". The provisions of this Article underlie the 1972 Convention on International Liability for Damage Caused by Space Objects. In defining the term "the launching State" the Convention reproduces word for word the appropriate provisions of Art. VII of the Space Treaty.

The Space Treaty has therefore established several binding legal norms with respect to the space activity carried on by non-governmental legal entities. First, general international responsibility is placed on states for the activities of non-governmental legal entities in outer space.[1] Second, the Treaty has fixed the range of states materially liable for damage caused by space objects (including those launched by or belonging to non-governmental legal entities) to other states and also to their natural or juridical persons. Third, the Treaty has imposed on states permitting non-governmental legal entities to engage in space activity the responsibility for taking measures at the level of national law (where necessary by introducing relevant legislation). These measures should include the obtaining by non-governmental legal entities of appropriate authorisation from a state agency, constant supervision by the latter over their space activities, and control over the observance of the Space Treaty and other universally accepted rules of international space law. If a state permits non-governmental legal entities to engage in space activity without the prior adoption of such measures within the framework of national law, this must be regarded as a violation by this state of its international obligations.

It is possible that, in an attempt to avoid control by its own state, a private company could reach agreement with another state which is not party to the Space Treaty and other space agreements on the launching of space objects from its territory.[2] An important question arises in this connection: which state is politically and materially liable for the operation of private companies on foreign territories? This question has gone beyond purely scientific discussions, since as early as 1975 the West German company OTRAG (Orbital Transport und Raketen Aktiengesellschaft) concluded an agreement with Zaire

[1] As Professor Bin Cheng of the University of London notes, "all activities in space, whether carried on by a government or a non-governmental agency, are deemed to be governmental activities involving direct State responsibility" (Bin Cheng, "The 1967 Space Treaty", *Journal du Droit International*, Vol. 95, No. 3, 1968, p. 584).

[2] A. M. Dula, "Regulation of Private Commercial Space Activities", *Proceedings of the 24th Colloquium on the Law of Outer Space*, op. cit., p. 38.

under which it has at its disposal territory that is twice the area of Switzerland.[1]

Some Western lawyers have noted that the Space Treaty does not explain the meaning of the term "national activities" and does not provide a single criterion for determining the links between the non-government legal entity and the state with whose authorisation and under whose supervision such an entity carries out its space activity (The Space Treaty makes use of an indefinite term "the appropriate State").[2]

While agreeing to some extent with these remarks, we believe that the current norms of international space law make it possible to ascertain quite accurately the states which bear international responsibility for the space activity of non-governmental legal entities.

The political responsibility and liability for the space activity of a non-governmental legal entity of one state on the territory of another state must rest on both states—the one whose nationality the legal entity enjoys and the one which has made its territory or facilities available for such activity. This stems from the fact that Art. VI of the Space Treaty says that the activity of non-governmental legal entities is covered by the concept "national space activity". Moverover, under this Treaty the responsibility for national space activity does not depend on the place from which space objects are launched. In this case liability is a derivative, an element of the general responsibility of the state for the activities of its legal entities. Therefore, references to the fact that formally a state whose nationality the legal entity enjoys may not come under the concept "the launching State" should not be taken into consideration. In the words of Stephen Gorove of the USA, a combined reading of Arts. VI and VII of the Space Treaty shows that "activities or ownership by a State's national (legal or natural person—*V. V.*) should be attributed to that State for purposes of imposing liability".[3]

The liability of a state that has granted its territory or facilities for launching objects belonging to foreign legal entities is beyond doubt, since it is provided for by Art. VI of the Space Treaty. As for the international political responsibility of that state, it ensues from the fact that the state, by granting its own territory or facilities, becomes to some extent a participant in the joint space activity along-

[1] After Zaire cancelled this agreement in 1977, OTRAG transferred its activities to the territory of Libya. In 1983, the Western press reported that this company had begun to launch its missiles in the Kiruna rocket range in northern Sweden (*New Scientist*, October 13, 1983).

[2] H. I. van Traa-Engelman, "Problems of State Responsibility in International Law", *Proceedings of the 26th Colloquium on the Law of Outer Space*, New York, 1984, pp. 139-142.

[3] S. Gorove, "Space Transportation Systems: Some International Legal Considerations", *Proceedings of the 24th Colloquium on the Law of Outer Space*, op. cit., p. 120.

side the state whose nationality the legal entity enjoys, and shares with this state the international political responsibility for this activity under Art. XIII of the Space Treaty.

Of course, the multiple political and material responsibility of states does not facilitate the procedure for settling questions associated with the satisfaction of legitimate demands and claims of third countries. However, it serves as an additional guarantee against possible abuses by private companies. When space operations are carried out on foreign territory, they must be supervised by two or more states. By the "appropriate State" with whose authorisation and under whose constant supervision non-governmental legal entities must carry on their activities (Art. VI of the Space Treaty), we mean both the state whose nationality the legal entity enjoys and the state (or states) on whose territory or with whose facilities it carries on its activity.

Space law experts draw attention to the special intricacies that arise in the settlement of this question as it applies to the transnational corporations, and also to the difficulties of some states in practically supervising and controlling the space activities of these corporations. Aldo Cocca of Argentina writes: "international and transnational corporations are currently able to launch space objects from some States, without control or technical supervision capability, a situation loaded with security problems, and legal ones as well."[1] This statement confirms the need for states to be extremely circumspect in granting their territory for the space activities of foreign national or multinational companies.

In accordance with Art. IX of the Space Treaty, any state may demand that appropriate international consultations be held regarding an activity or experiment planned in outer space by other states or *their nationals* if there is reason to believe that such activity or experiment will result in potentially harmful interference with activities of other states in the peaceful exploration and use of outer space.

Western literature on space law sometimes claims that if a state is not party to the Space Treaty or the Convention on International Liability for Damage Caused by Space Objects this absolves that State from international responsibility for national space activity and for the space activity of foreign juridical and natural persons on its territory.[2]

We cannot agree with such assertions. The basic principles of international space law, set forth in the Space Treaty, have long been universally recognised: they have been endorsed by all UN members,

[1] A. Cocca, "Introduction to the Study of the Legal Framework for Economic Activity in Space", *Legal Framework for Economic Activity in Space*, Cordoba, 1982, p. 122.

[2] See, for example, A. Dula, "Regulation of Private Commercial Space Activities", *Proceedings of the 24th Colloquium on the Law of Outer Space*, op. cit., p. 38.

first in the form of the 1962 Declaration and then of the 1967 Space Treaty. These principles are not only of a contractual but also of a customary-legal nature. Any departure from them would be a gross violation of contemporary international law. Recognition of the possibility for a state which is not party to the Space Treaty to carry on space activity without observing the principles of this Treaty would be tantamount to rejection of law and order in outer space and would cause utter anarchy. Equally impermissible is recognition of some principles of the Space Treaty (e.g. the freedom of outer space) and non-recognition of others (e.g. responsibility for space activity or ban on the appropriation of outer space and its component parts), since all these principles are interrelated, interdependent and constitute a single whole.

3. Constant Supervision and Control Over the Space Activity of Non-Governmental Legal Entities as an International Duty of States

Paul G. Dembling, former NASA General Counsel, who had a direct part in the drafting of the Space Treaty, writes in his analysis that the second sentence in Art. VI, which states that "the activities of non-governmental entities in outer space ... shall require authorisation and continuing supervision by the State concerned" is "the most important from the standpoint of domestic concern". He emphasises that this sentence prohibits, "as a matter of treaty obligation, strictly private, unregulated activity in outer space or on celestial bodies". He states further: "Although the terms 'authorisation' and 'continuing supervision' are open to different interpretations, it would appear that Article VI requires a certain minimum of licensing and enforced adherence to government-imposed regulations".[1]

International law leaves to the discretion of a state the procedure for national regulation of space activity carried on by non-governmental legal entities and the application of this procedure inside the country. However, it is not a matter of indifference for international relations and international law whether this regulation ensures the observance of international rules and protects other states from the infringement of their lawful rights and interests. It seems to us that the necessary minimum of legal regulation should include determination of the terms of and procedure for issuing permits to non-governmental legal entities to conduct space activity, and the appointment of a state body or bodies with appropriate powers and responsible for the issue of such permits and for constant supervision and control.

[1] P. G. Dembling, "Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies", *Manual on Space Law*, Vol. 1, New York, 1979, p. 17.

In the USA, the wide access of private companies to all fields of space activity was not preceded by requisite legal regulation in the domestic sphere which would place their space activity within strict confines and guarantee their observance of international principles and norms.

In 1982, Arthur Dula, a legal adviser of US companies engaged in private space business, wrote: "No specific legislation presently exists by which independent private aerospace activities can be brought into conformity with national objectives."[1] From this he made a number of conclusions and recommendations. In his opinion, it is exclusively up to the company whether or not it has received authorisation for space activity.[2] In this context he recommends that there be no hurry in getting government authorisation since it can be granted "before, *during or after the launching of a satellite*" (italics ours–*V.V.*).[3] He holds that a private company can avoid a government body's "claims" to the right to issue authorisation and maintain continual supervision by transferring its activity to the territory of another state not party to the Treaty.[4]

A. Dula also draws lawyers' attention to a government's inability to control the space activity of private companies: "unless the enterprise voluntarily submits to government control over its space operations, the government could be placed in the position of being responsible for damages caused by the object without having the opportunity to prevent them".[5] To illustrate a government's inability to prevent the violation of patent law, A. Dula refers to the opinion of specialists that "the use of a patented process for manufacturing a product aboard a space vehicle might be considered an infringement of a United States patent; but the patent owner would have no protection until that product entered the American marketplace".[6]

Now we shall deal at length with this statement by Dula: "Raw data (obtained by private companies from spacecraft–*V.V.*) can certainly be a 'trade secret' or 'commercial or financial information', and thus should be exempt from forced disclosure under any circumstances."[7]

We should note in this connection that during the UN examination of the legal regulation of remote sensing from outer space, the USA has invariably upheld "the free and uninterrupted" dissemination of any information about foreign territories in defiance of the demands of many states that it is necessary to have regard for the

[1] A. M. Dula, "Regulation of Private Commercial Space Activities", *Proceedings of the 24th Colloquium on the Law of Outer Space*, op. cit., p. 37.
[2] Ibid., p. 35, 37.
[3] Ibid., p. 34.
[4] Ibid., p. 38.
[5] Ibid., p. 33.
[6] Ibid., p. 33.
[7] Ibid., p. 34.

economic and defence interests of the sensed states. In this case we are faced with the opposite extreme: the refusal of private companies to provide their space information to the sensed states could do damage to those states' economic and defence interests and open the door to all kinds of abuse. This threat is becoming a real one in connection with the US Administration's plans to place the operative space system of remote sensing of the Earth in private hands.

It is perfectly clear that the growing space activity of private capital will in no way help to settle such a burning question of international space law as the regulation of remote sensing of the Earth. The same must also be said about such problems of international law as direct television broadcasting via satellites and the use of the geostationary orbit.

In this connection we have to object to the appeals by American and other Western lawyers for minimal government regualtion of private space activity. Arthur Dula concludes: "History shows that little regulation is the most effective method of dealing with non-governmental commercial interests."[1] Other American jurists echo Dula when they assert that minimal government regulation of space activity in general and maximum freedom of commercial space activity best facilitate efficiency and justice.[2] West German lawyer K. H. Böckstiegel is largely at one with them when he says: "Sometimes the lack of explicit regulation by law might be better than a bad regulation" and on this basis calls on legislators to display "compromise and flexibilility".[3]

Of course, the determination of the scope and concrete content of government regulation of national space activity is part of the competence of the State itself, but the lawful interests of other states and of the world community as a whole should not be damaged, and a state that has assumed international obligations should honour them.

4. Private Enterprise in Outer Space

Encouragement of the participation of private companies in space activity is not a new phenomenon in the policy of Western governments. From the very beginning of the space era huge government orders have been rearing private aerospace industries in the USA, West European countries and Japan. In the past, however, private companies did not directly participate in the exploration of outer space: as a rule, they were subcontractors who developed or manufactured space

[1] Ibid., p. 39.

[2] Wijkman and Wihlborg. "Global Use and Regulation of Space Activities Under the Common Heritage Principle", *Space Activities and Implications: Where From and Where To at the Threshold of the '80s*, Montreal, 1981.

[3] K. H. Böckstiegel, "Legal Implications of Commercial Space Activities", op. cit., p. 15.

technologies for subsequent use by government bodies.

In 1962, the US Congress took the first step to promote the direct participation of private capital in the use of outer space by adopting the law on the Communications Satellite Corporation (COMSAT), a private profit-making corporation empowered to create a commercial communications satellite system and exploit it independently or together with foreign governments or private companies. This decision of the US Administration and Congress, sharply criticised in the USA and abroad, determined the initial position of the US monopolies with regard to the economic use of outer space.[1]

Practical realisation of the policy of involving private capital in direct space activity was delayed because at that stage, with the exception of space communications, it was not yet clear which were the most profitable spheres for applying space technology, sufficient R & D, which private companies prefer to undertake at government expense, had not been conducted and the economic risk was too great.

The new trends in the practical use of outer space that have surfaced in recent times (the prospecting of land resources from space, the obtaining of materials with new properties in conditions of weightlessness and vacuum, direct television broadcasting via outer space, etc.), and also the prospect of independent manufacture and commercial use of rockets and spacecraft developed on the basis of R & D works conducted by the state, have aroused private companies' growing interest in economic activity in outer space.[2]

This interest has met with a very favourable response and understanding on the part of capitalist governments. With the economic slump in the capitalist world, the Western governments saw this as a chance to alleviate their budget problems by reducing state expenditure on the civilian sectors of the exploration and use of outer space.

In the USA, the line of transferring as much as possible of the civilian part of the national space programme to private capital is accompanied by a rise in state spending on the military use of outer space.[3] This policy is reflected in President Reagan's two directives on national space policy dated July 4, 1982 and May 16, 1983.[4]

The first directive, which deals chiefly with the militarisation of

[1] I. Cheprov, "Monopolies Reach into Space", *International Affairs*, No. 12, 1963, p. 40.

[2] According to John Disher, former director of advanced programmes in NASA's Office of Space Transportation, over the next 25 years revenues from commercial operations in space will grow to tens of billions of dollars per year (See J. H. Disher, "Space Transportation, Satellite Services and Space Platforms", *Astronautics and Aeronautics*, No. 4, 1979, p. 67.

[3] Since 1982, the budget of the US Defence Department on space programmes has exceeded the NASA budget (see *Journal of Space Law*, Vol. 10, No. 1, 1982, p. 50).

[4] *White House Fact Sheet. National Space Policy, July 4, 1982*, Press Release, the White House, Office of the Press Secretary, May 16, 1983.

outer space, speaks about private sector participation in the US space programme: "The United States Government will provide a climate conducive to expanded private sector investment in space activities."[1] In keeping with this promise the second directive, devoted to the private sector's space activities, permitted the sale to private companies of the rights to the manufacture and launching of rocket boosters (of the Delta, Atlas and Titan types), which were earlier used by the Air Force and NASA, and also granted to private companies the right to exploit the launching pads with all the necessary facilities at state space centres to put commercial rockets into orbit.

The US President's directive of May 16, 1983 gave the green light to vigorous space activity by American private capital, which now has open to it the entire spectrum of space activity, from the manufacture and launching of rockets and spacecraft to their varied use in space and the application of the obtained results on the Earth. Moreover, the President's directive promises maximum support for and encouragement of such activity with minimal legal regulation.

Even a cursory review of the current privatisation of outer space shows that private capitalist companies are already extending their activities to all areas of space research.

Thus, long before the US President's directive of May 16, 1983, the leading manufacturers of the THORAD-Delta and Atlas-Centaur rockets (McDonnel Douglas and General Dynamics, respectively) began to consider continuing to manufacture and exploit launch vehicles on a private basis after NASA would cease to order them to meet its needs.[2] Other American firms—Space Transportation and Martin Marietta—stated their intention to engage in the production and marketing of Titan launch vehicles.[3] US Orbital Systems. Inc. offered to finance the development of a new solid propellant upper stage for the Space Shuttle.[4]

According to information published by the UN in 1983, 15 private corporations, located primarily in the United States, Canada and the FRG, were developing their own individual launch capabilities for commercial purposes.[5] Among them is Space Services, founded by Texas millionaires, which already began testing its launch vehicles some years ago.[6]

In Western Europe, French firms are the most active in this sphere. In 1980, a private firm—Arianespace—was set up in France to manufacture, market and launch the Ariane rocket booster. True, a state organisation—Centre National d'Etudes Spatiales—is the compa-

[1] Ibid.
[2] *Defense Space Business Daily*, November 29, 1982, p. 141.
[3] *Aviation Week and Space Technology*, December 6, 1982, p. 26.
[4] *Defense Space Business Daily*, November 29, 1982, p. 141.
[5] UN Doc. A/AC.105/L. 131, 2 May 1983.
[6] *Air et Cosmos*, No. 871, September 5, 1981, pp. 45-46, a report on the explosion of the first private US rocket Percheron.

ny's main shareholder, but 36 firms and 13 banks in Western Europe are also shareholders.[1] The West German firm OTRAG, founded in 1974, has operated on the territory of Zaire, Libya and Sweden. There are reports that NASA plans to sell the right to use the Kennedy Space Centre to a private firm.[2] A number of US and West European companies are developing satellite platforms for commercial use. For example, in 1983, NASA and Fairchild Industries signed an agreement under which the latter undertook to manufacture by 1987 a freeflier space platform for subsequent commercial use in the obtaining of new materials in outer space, in remote sensing of the Earth and in scientific experiments.[3]

Private capital also has its eyes on manned space flights, particularly in connection with the new possibilities for the commercial use of the Space Shuttle. American professor Stephen Gorove writes about the expected "dramatical" rise in the participation of private firms in space activities following the successful Space Shuttle test flights. He believes that these flights open up new possibilities for building large space constructions, including industrial plants, communication, power and medical centres and stations for the global study of the Earth's resources and climate, and will eventually lead to settlements in outer space.[4]

The commercial sale of future Space Shuttles flights by the government-operated NASA went so far that the organisations fully or partially chartering the Space Shuttle were given the right to choose their own astronauts for space flights. NASA has only reserved the right to approve any such flight and to reject potential candidates for health reasons. It was reported that the six-month training of one astronaut at NASA's Johnson Space Centre at Houston, Texas, would cost a US or foreign company over 1.5 million dollars.[5] Thus, in the not too distant future outer space will be visited by people who will represent private capital and not all humanity, though Art. V of the Space Treaty regards astronauts "as envoys of mankind in outer space". Furthermore, such astronauts will only be given short training courses for space flights.[6]

Thus US press has reported that a special task force, appointed by NASA to examine the question of flying private citizens on the Space Shuttle has recommended that consideration be given to flying three

[1] P. Langereux, "Commercialisation de l'espace", *Air et Cosmos*, No. 947, March 26, 1983, pp. 53-55.

[2] *Aviation Week and Space Technology*, December 13, 1982, p. 70.

[3] *NASA News*, Release of September 21, 1983; *Air et Cosmos*, No. 969, March 26, 1983, p. 48.

[4] S. Gorove, "Implications of International Space Law for Private Enterprise", *Annals of Air and Space Law*, Vol. 7, 1982, pp. 319-330.

[5] *Flight International*, October 8, 1983, p. 945.

[6] Normally, US astronauts take a one-year general training course and then spend at least one or two years training for a specific mission.

or four private citizens on the Shuttle in the 1984-87 period "as observers". According to this task force, such observers "could be prepared for the mission with 100 hours of training over two months".[1]

The US President's directive of 16 May 1983 points out that through the fiscal year 1988 the price of Space Shuttle (STS) flights "will be maintained in accordance with the currently established NASA pricing policies in order to provide market stability and assure fair competition. Beyond this peirod, it is the US Government's intent to establish a full cost recovery policy for commercial and foreign STS flight operations."[2]

According to US press reports, the Space Shuttles, or at least some of them, may be placed fully at the disposal of private firms. The US Space Transportation Co. offered to finance the manufacture of "a fifth Orbiter with up to one billion dollars of its own funds"[3] in order to receive the right to use it commercially. Other variants of transferring the Space Shuttle to private hands are being considered.

American and West European companies have shown great interest in the prospect of organising industrial production in outer space, especially the production of new materials or materials with better properties, e.g. medicines, crystals and exceptionally pure glass. In 1980, NASA concluded its first agreement with McDonnel Douglas, under which this firm undertook to invest large sums in the development of installations for electrophoresis with a view to obtaining and selling medicines of high purity.[4] An American firm, GTI Corporation, is developing a furnace designed for metallurgical uses on board the Space Shuttle.[5] A number of other US and West European firms plan experimental processing work on the Shuttle flights.[6] NASA has issued a special guide for joint commercial operations with American companies in the processing of materials. It has also set up a special working group to make recommendations concerning measures to stimulate rapid commercialisation of space activities.

American private companies have played a very active role in the decision-making process concerning the development by the USA of an orbital space station. In August 1983 the heads of 12 American investment companies told President Reagan that the space station was

[1] *Defense Daily*, June 27, 1983.

[2] *Weekly Compilation of Presidential Documents*, May 23, 1983, Vol. 19, No. 20, p. 722.

[3] *Defense Daily*, July 15, 1983, p. 79.

[4] *Journal of Space Law*, Vol. 9, 1981, p. 74.

[5] *Defense Daily*, November 29, 1982, p. 141.

[6] See UN Doc. A/AC.105/L.131, 2 May 1983, it was reported that approximately 70 US non-aerospace companies spent money "to investigate the possibility of conducting commercial manufacturing activities in space" (*Defense Daily*, November 17, 1983, p. 93).

an important element necessary for stimulating venture capital in the space orbit.[1] The Space Industries Inc. has begun working on a project for a private space station.

As already mentioned, communication via satellites has become the primary sphere of the economic application of space technology by private capital. This is because this direction in the applied use of outer space was seen to be profitable immediately after it emerged. According to American press reports, satellite communications generate almost two billion dollars in annual revenues.[2] International and national communication systems are now in wide use for commercial purposes.

Unlike space communications, two other major directions in the economic use of outer space—space meteorology and the study of the Earth's resources from outer space—continued to be a sphere for the activities of government space organisations since the returns on private investment in the development and use of these space systems were not so obvious. But as the study of the Earth from outer space moves from the expensive experimental phase to the highly profitable exploitation phase private companies' interest in them is increasing.

The first practical step was taken in Western Europe, where in 1982 a French company—Spot Image—was created to sell information about the Earth's natural resources which was to be obtained with the help of the French satellite Spot. In 1983, a subsidiary of this company was set up in the USA.[3]

The US President's Directive on Civil Space Policy (1978) included "as a key element the provision for the private sector to take increasing responsibility in remote sensing and other applications".[4] On March 8, 1983, President Reagan approved "the plan to sell the US meteorological satellite and LANDSAT Earth resources satellites to the private sector, with the $1.5 billion system sold to the highest bidder".[5] In 1984, the US Congress passed an act on the commercialisation of remote sensing of the Earth which permits the sale of LANDSAT satellites to private industry. Simultaneously three American companies—Space Services Inc., American Science and Technology Corporation and Aeros Data Corporation—formed a branch com-

[1] *Aviation Week and Space Technology*, August 8, 1983; *Defense Daily*, August 5, 1983.

[2] *The New York Times*, December 2, 1981.

[3] P. Langereux, "Commercialisation de l'espace", *Air et Cosmos*, No. 947, March 26, 1983, pp. 53-55.

[4] See Daniel E. Cassidy "International Space Cooperation: Participation of Private Enterprises", *Proceedings of the 23rd Colloquium on the Law of Outer Space*, op. cit., p. 135.

[5] *Defense Daily*, March 10, 1983, p. 59 and *Izvestia*, March 16, 1983. The transfer of meteorological satellites to private hands was opposed by Congress, and the US Administration was forced to reject the plan to sell the meteorological satellites.

pany, Space America, in order to develop their own commercial satellite system for the study of natural resources. The satellites of this system are to provide information about the world's agricultural, water and power resources. It will be sold at cheaper prices than information supplied by the government LANDSAT system.[1]

In 1984, two American firms–COMSAT and Stenbeck Group–and the West German firm Messerschmitt-Bölkow Blohm set up a common branch, the SPARX Corp., to conduct remote sensing of the Earth for commercial purposes.[2]

The US government plan to place the applied space systems in private hands undermines international cooperation in outer space and has greatly disturbed many countries, especially the developing nations. The Latin American countries that are members of COPUOS circulated a document in the UN expressing their concern that this action "would endanger international cooperation, since it would impede the efficient and fair pursuit of the traditional system of providing data and exchanging information free of charge".[3] Today meteorological information is circulated free of charge practically throughout the world.

The developing countries also expressed their concern over the expected transfer of space systems and space technology to private companies at the Second UN Conference on the Exploration and Peaceful Uses of Outer Space, held in August 1982 in Vienna.[4]

We therefore see that the present stage in the space policy of the USA and some West European countries is marked by the unprecedented involvement of private capital in the civilian sphere of space activities, and the intensive development and state centralisation of military space programmes. The new elements of this policy include the wide access of private companies to the manufacture, launching and use of rockets and other transport spacecraft, among them Shuttle-type spaceships, and the transfer to private hands of applied civilian space systems that were traditionally controlled by the state. The general intensification of space business is accompanied by the expansion of private space activities, a development which is being closely followed by the world public, since outer space has always been regarded as a sphere of the activities of states and intergovernmental organisations. In the opinion of some American specialists who have analysed the US space programme, "by the end of this century the private sector could be the major civilian actor in space".[5]

[1] *Aviation Week and Space Technology*, September 26, 1983, p. 87.

[2] *Air et Cosmos*, No. 989, February 18, 1984, p. 48.

[3] UN Doc. A/AC.105/C.2/L.142, 6 April 1983.

[4] See "Report of the Second UN Conference on the Exploration and Peaceful Uses of Outer Space", UN Doc. A/Conf.101/10, p. 123.

[5] *UNISPACE-82, A Context for International Cooperation and Competition*. A Technical Memorandum, Congress of the United States, Office of Technology Assessment, Washington D.C., February 1983, p. V-13.

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The new stage in US space policy is characterised by the galloping militarisation of outer space and the maximum transfer of all areas of the civilian use of outer space to private capital. The threat of the arms race spreading to space and the large-scale space activities of private capitalist companies seriously complicate interstate cooperation in the scientific, technical, economic, political and legal spheres of the exploration and use of outer space.

There are no serious grounds for the claims of some Western lawyers about an existent principle in international law providing for "freedom of private enterprise in outer space". International space law has been developing since its inception as a law of interstate cooperation. The general direction of the regulation of space activity by international law is determined in Art. I of the 1967 Space Treaty, which says: "The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind." International space law regards the space activities of non-governmental legal entities, including private companies, not as a general rule or principle, but as an exception to the general rule that states and intergovernmental organisations operate in outer space.

According to international space law, political responsibility and liability for private activities in outer space are borne by the states which permit such activities (including foreign states from whose territory or facilities spacecraft are put into orbit).

Non-governmental legal entities may carry on their space activities only with the authorisation and under the constant supervision of the relevant state, which is obliged to introduce national regulation of such activities and to ensure its strict observance.

The intensive activities of private capitalist companies in outer space will negatively affect the further development of international space law and above all the elaboration of legal rules regulating the study of the Earth from space, direct television broadcasting and the use of the geostationary orbit.

Man's future in outer space will be neither the pursuit of private profit in this new universal sphere of activity, nor competition but rather will be purposeful national and international activities based on the broad development of international cooperation and aimed at the exploration, development and gradual settlement of outer space for the benefit and in the interests of all nations of the globe. These were the ideas which guided the United Nations in laying the foundation for this new branch of international law and elaborating the principles of law and order in this sphere, and these were the ideas which inspired the pioneers in outer space.

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